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Section 00

Precautions

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Precautions

Precautions

General Precautions

BENH23K20000001

⚠ WARNING

- Proper service and repair procedures are important for the safety of the service mechanic and the safety and reliability of the motorcycle.
- When 2 or more persons work together, pay attention to the safety of each other.
- When it is necessary to run the engine indoors, make sure that exhaust gas is forced outdoors.
- When working with toxic or flammable materials, make sure that the area you work in is well ventilated and that you follow all of the material manufacturer's instructions.
- To avoid getting burned, do not touch the engine, engine oil and exhaust system until they have cooled.

NOTICE

- Never use gasoline as a cleaning solvent.
- After servicing the fuel, oil, exhaust or brake systems, check all lines and fittings related to the system for leaks.
- If parts replacement is necessary, replace the parts with Suzuki Genuine Parts or their equivalent.
- When removing parts that are to be reused, keep them arranged in an orderly manner so that they may be reinstalled in the proper order and orientation.
- Be sure to use special tools when instructed.
- Make sure that all parts used in reassembly are clean. Lubricate them when specified.
- Use the specified lubricant, bond, or sealant.
- When removing the battery, disconnect the negative (–) cable first and then the positive (+) cable.
- When reconnecting the battery, connect the positive (+) cable first and then the negative (–) cable, and replace the terminal cover on the positive (+) terminal.
- When performing service to electrical parts, if the service procedures do not require use of battery power, disconnect the negative (–) cable from the battery.
- When tightening the cylinder head or case bolts and nuts, tighten the larger sizes first. Always tighten the bolts and nuts diagonally from the inside toward outside and to the specified tightening torque.
- Whenever you remove oil seals, gaskets, packing, O-rings, locking washers, selflocking nuts, cotter pins, circlips and certain other parts as specified, be sure to replace them with new ones. Also, before installing these new parts, be sure to remove any left over material from the mating surfaces.
- Never reuse a circlip. When installing a new circlip, take care not to expand the end gap larger than required to slip the circlip over the shaft. After installing a circlip, always ensure that it is completely seated in its groove and securely fitted.
- Use a torque wrench to tighten fasteners to the specified torque. Wipe off grease and oil if a thread is smeared with them.
- After reassembling, check parts for tightness and proper operation.
- To protect the environment, do not unlawfully dispose of used motor oil and other fluids: batteries, and tires.
- To protect Earth's natural resources, properly dispose of used motorcycle and parts.

Precautions for Electrical Circuit Service

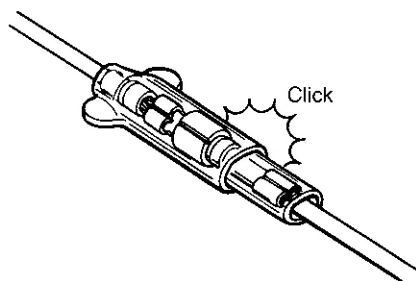
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When handling the electrical parts or servicing the electric system, observe the following points for the safety of the system.

Electrical Parts

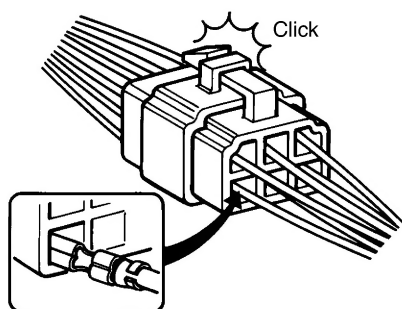
Connector / Coupler

- Faulty electrical system is often related to poor electrical contact of connector/coupler. Before servicing individual electronic part, check electrical contact of the connector/coupler.
- When connecting a connector, be sure to push it in until a click is felt.



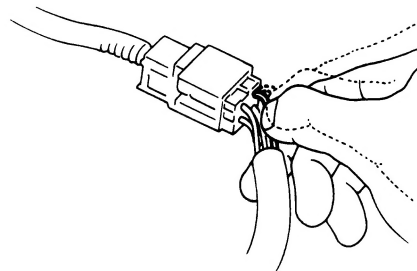
I310G1000001-01

- With a lock type coupler, be sure to release the lock when disconnecting, and push it in fully to engage the lock when connecting.
- When disconnecting the coupler, be sure to hold the coupler body and do not pull the lead wires.
- Inspect each terminal on the connector/coupler for looseness or bending.
- Push in the coupler straightly. An angled or skewed insertion may cause the terminal to be deformed, possibly resulting in poor electrical contact.
- Inspect each terminal for corrosion and contamination. The terminals must be clean and free of any foreign material which could impede proper terminal contact.
- Before refitting the sealed coupler, make sure its seal rubber is positioned properly. The seal rubber may possibly come off the position during disconnecting work and if the coupler is refitted with the seal rubber improperly positioned, it may result in poor water sealing.



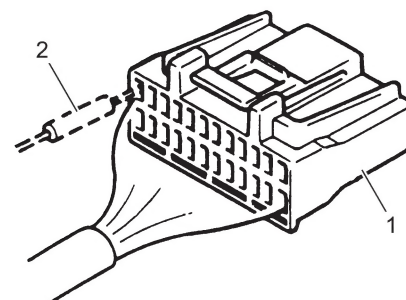
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- Inspect each lead wire circuit for poor connection by shaking it by hand lightly. If any abnormal condition is found, repair or replace.



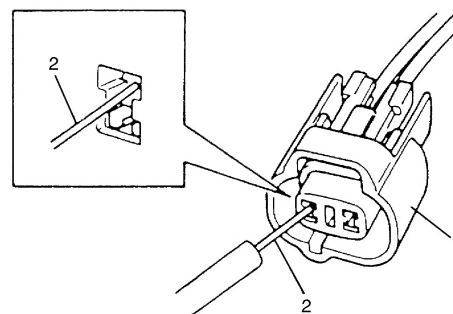
I310G1000003-02

- When taking measurements at electrical coupler (1) using a tester probe (2), be sure to insert the probe from the wire harness side (rear) of the coupler.



IF04K1000002-02

- When connecting meter probe (2) from the terminal side of the coupler (1) because it cannot be connected from harness side, use extra care not to bend the male terminal of coupler or force its female terminal open for connection. In case of such coupler as shown connect probe as shown to avoid opening female terminal. Never connect probe where male terminal is supposed to fit.



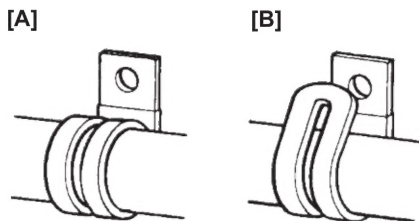
ID26J1000014-01

- Avoid applying grease or other similar material to connector/coupler terminals to prevent electric trouble.

00-3 Precautions:

Clamp

- Clamp the wire harness at such positions as indicated in "Wiring Harness Routing Diagram" in Section 9A (Page 9A-7).
- Bend the clamp properly so that the wire harness is clamped securely.
- In clamping the wire harness, use care not to allow it to hang down.
- Do not use wire or any other substitute for the band type clamp.



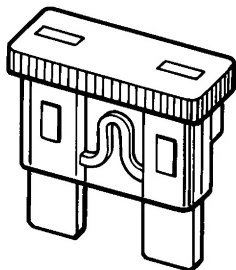
IE02K1000002-01

[A]: Correct clamping

[B]: Incorrect clamping

Fuse

- When a fuse is blown, always investigate the cause to correct it and then replace the fuse.
- Do not use a fuse of different capacity.
- Do not use wire or any other substitute for the fuse.



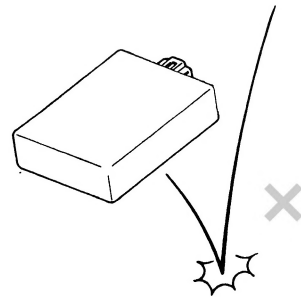
I649G1000001-02

Switch

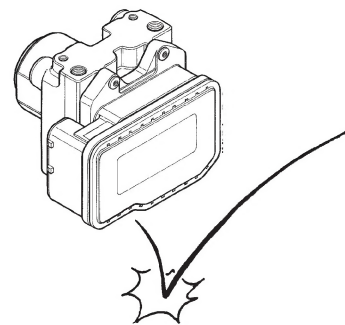
Never apply grease material to switch contact points to prevent damage.

ECM / CDI UNIT / ABS control unit/HU / Various sensors

- Since each component is a high-precision part, great care should be taken not to apply any severe impacts during removal and installation.

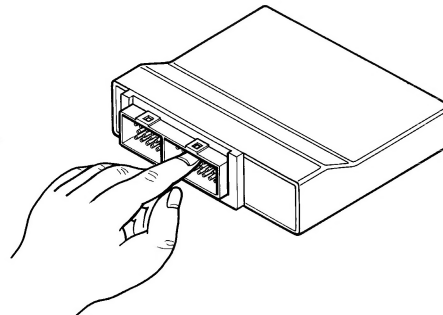


I425A1000006-01



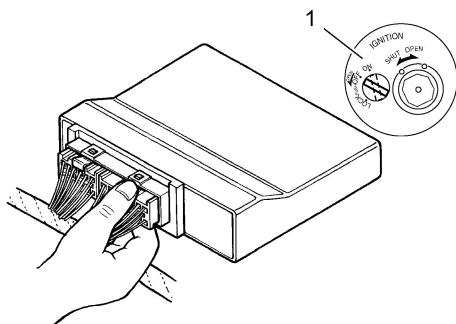
I649G1000003-02

- Be careful not to touch the electrical terminals of the electronic parts (ECM / CDI UNIT, etc.). The static electricity from your body may damage them.



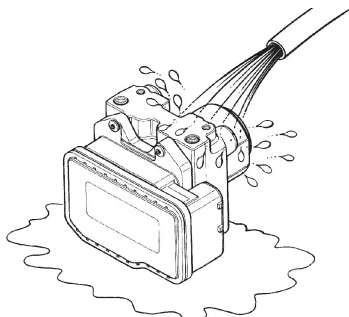
I310G1000008-01

- When disconnecting and connecting the coupler, make sure to turn OFF the ignition switch (1), or electronic parts may get damaged.



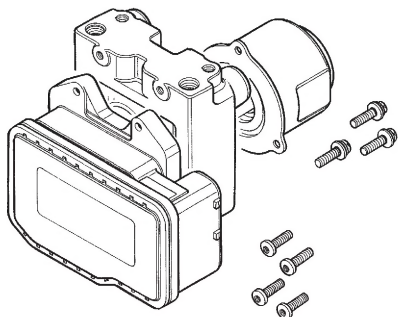
IE39J1000001-01

- Never allow dust or water to contact the ABS control unit/HU.



I649G1000004-02

- The ABS control unit/HU cannot be disassembled. Replace the whole unit with a new one.

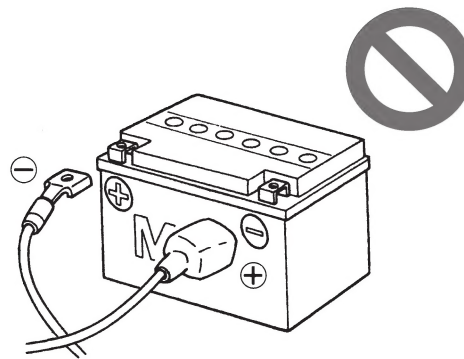


I649G1000005-02

- Never connect any tester (voltmeter, ohmmeter, or whatever) to the electronic unit when its coupler is disconnected. Otherwise, damage to electronic unit may result.
- Never connect an ohmmeter to the electronic unit with its coupler connected. If attempted, damage to ECM / CDI UNIT / ABS control unit/HU or sensor may result.
- Be sure to use a specified voltmeter/ohmmeter. Otherwise, accurate measurements may not be obtained and personal injury may result.

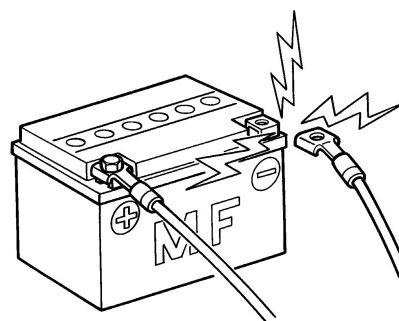
Battery

- Select the same type MF battery when replacing the battery.
- Battery connection in reverse polarity is strictly prohibited. Such a wrong connection will damage the components of the FI system and ABS instantly when reverse power is applied.



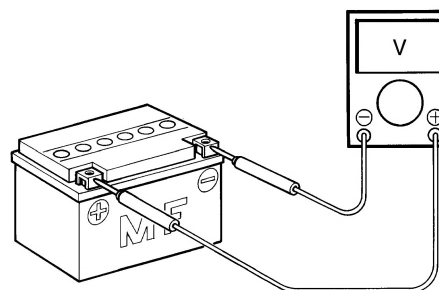
I718H1000004-01

- Removing any battery terminal of a running engine is strictly prohibited. The moment such removal is made, damaging counter electromotive force will be applied to the electronic unit which may result in serious damage.



I310G1000011-01

- Before measuring voltage at each terminal, check to make sure that battery voltage is 11 V or higher. Terminal voltage check with a low battery voltage will lead to erroneous diagnosis.



I310G1000012-02

Electrical Circuit Inspection Procedure

While there are various methods for electrical circuit inspection, described here is a general method to check for open and short circuit using an ohmmeter and a voltmeter.

00-5 Precautions:

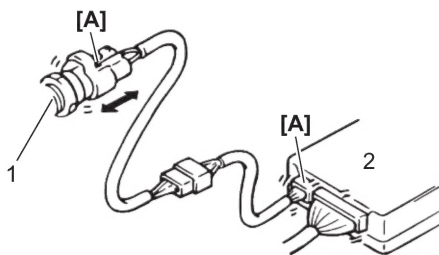
Open circuit check

Possible causes for the open circuit are as follows. As the cause can exist in the connector/coupler or terminal, they need to be checked carefully.

- Loose connection of connector/coupler
- Poor contact of terminal (due to dirt, corrosion or rust, poor contact tension, entry of foreign object etc.)
- Wire harness being open.
- Poor terminal-to-wire connection.

When checking system circuits including an electronic control unit such as ECM, etc., it is important to perform careful check, starting with items which are easier to check.

- 1) Disconnect the negative (–) cable from the battery.
- 2) Check each connector/coupler at both ends of the circuit being checked for loose connection. Also check for condition of the coupler lock if equipped.



IE02K1000004-01

[A]: Check for loose connection

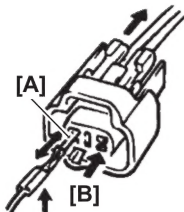
1. Sensor

2. ECM

- 3) Using a test male terminal, check the female terminals of the circuit being checked for contact tension.

Check each terminal visually for poor contact (possibly caused by dirt, corrosion, rust, entry of foreign object, etc.). At the same time, check to make sure that each terminal is fully inserted in the coupler and locked.

If contact tension is not enough, rectify the contact to increase tension or replace. The terminals must be clean and free of any foreign material which could impede proper terminal contact.

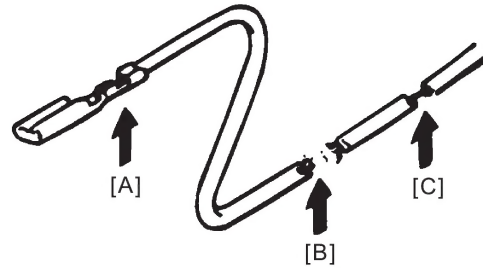


IE02K1000005-01

[A]: Check contact tension by inserting and removing.

[B]: Check each terminal for bend and proper alignment.

- 4) Using continuity inspect or voltage check procedure as described below, inspect the wire harness terminals for open circuit and poor connection. Locate abnormality, if any.



ID26J1000005-03

[A]: Looseness of crimping

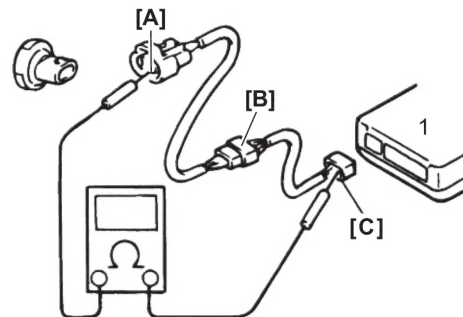
[B]: Open

[C]: Thin wire (A few strands left)

Continuity check

- 1) Measure resistance across coupler [B] (between [A] and [C] in the figure).

If no continuity is indicated (infinity or over limit), the circuit is open between terminals [A] and [C].

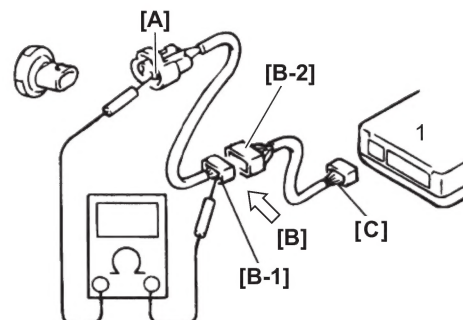


IE02K1000007-01

1. ECM

- 2) Disconnect the coupler [B] and measure resistance between couplers [A] and [B-1].

If no continuity is indicated, the circuit is open between couplers [A] and [B-1]. If continuity is indicated, there is an open circuit between couplers [B-2] and [C] or an abnormality in coupler [B-2] or coupler [C].



IE02K1000008-01

1. ECM

Voltage check

If voltage is supplied to the circuit being checked, voltage check can be used as circuit check.

- 1) With all connectors/couplers connected and voltage applied to the circuit being checked, measure voltage between each terminal and body ground.
- 2) If measurements were taken as shown in the figure and results were listed in the following, it means that the circuit is open between terminals [A] and [B].

Voltage between

[A] and body ground: 0 V

[B] and body ground: Approx. 5 V

[C] and body ground: Approx. 5 V

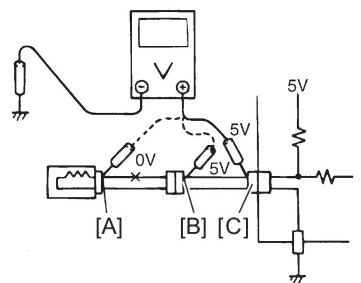
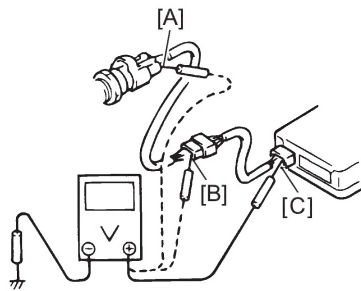
- 3) Also, if measured values are as listed following, a resistance (abnormality) exists which causes the voltage drop in the circuit between terminals [A] and [B].

Voltage between

[A] and body ground: 3 V – 2 V voltage drop

[B] and body ground: Approx. 5 V

[C] and body ground: Approx. 5 V



ID26J1000008-05

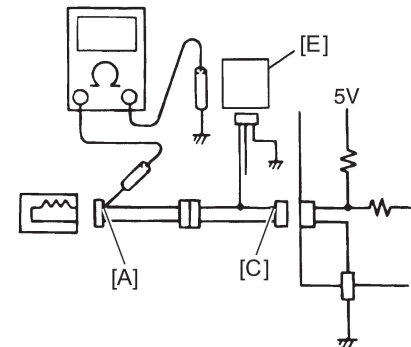
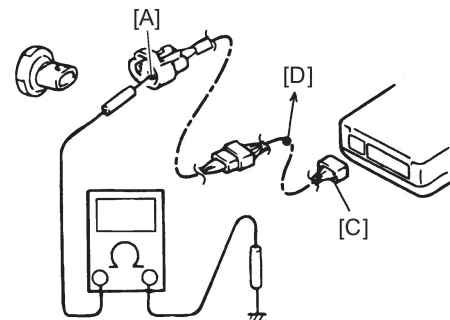
Short circuit check (Wire harness to ground)

- 1) Disconnect the negative (–) cable from the battery.
- 2) Disconnect the connectors/couplers at both ends of the circuit to be checked.

NOTE

If the circuit to be checked branches to other parts as shown, disconnect all connectors/couplers of those parts. Otherwise, diagnosis will be wrong.

- 3) Measure resistance between terminal at one end of circuit ([A] terminal in the figure) and body ground. If continuity is indicated, there is a short circuit to ground between terminals [A] and [C].

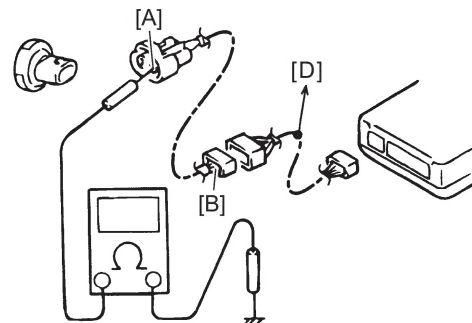


IF04K1000003-01

[D]: To other parts

[E]: Other parts

- 4) Disconnect the connector/coupler included in circuit (coupler [B]) and measure resistance between terminal [A] and body ground. If continuity is indicated, the circuit is shorted to the ground between terminals [A] and [B].



[D]: To other parts

IF04K1000001-01

Precautions for Circuit Tester

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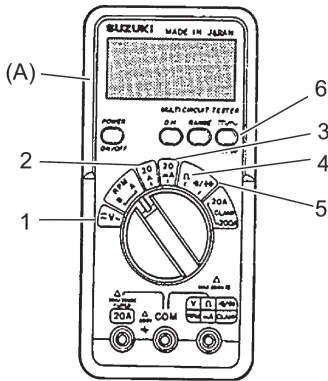
- Use the Suzuki multi circuit tester set.
Special tool
(A): 09900–25008
- The following items are included in the special tool.
 - Multi circuit tester body
 - Tachometer sensor
 - Test leads
 - Peak volt adapter
 - Case
 - Instruction Manual
- Read the instruction manual to use the tester correctly.
- Be sure to set the tester to the correct testing range.
- If the voltage and current are not known, make measurements using the highest range.

Symbols

Symbol	Definition
---	DC
~	AC
Ω	Resistance
•))	Continuity
→ ←	Diode

Functions

	Function switch	--- / ~ •)) / → ← key switch (6)
Voltage measurement	(1)	Select --- or ~ .
Current measurement	(2) or (3), whichever appropriate.	Select --- or ~ .
Resistance measurement	(4)	—
Continuity test	(5)	Select •)) .
Diode test	(5)	Select → ← .



ID26J1000011-01

Using Needle Pointed Probe

NOTICE

- When using the multi circuit tester, do not strongly touch the terminal of the ECM couplers with a needle pointed tester probe to prevent the terminal damage or terminal bend.
- When connecting the multi circuit tester, use the needle pointed probe to the back side of the lead wire coupler and connect the probes of tester to them.
- Use the needle pointed probe to prevent the rubber of the water proof coupler from damage.

Special tool
09900–25009

Section 0

General Information

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General Information

General Description

Abbreviations

BENH23K20101001

A:
AAT: Ambient Air Temperature
ABDC: After Bottom Dead Center
ABS: Anti-lock Brake System
AC: Alternating Current
ACL: Air Cleaner
AKI: Anti-knock index
AP: Atmospheric Pressure
API: American Petroleum Institute
ATDC: After Top Dead Center
A/F: Air Fuel Ratio
B:
BBDC: Before Bottom Dead Center
BTDC: Before Top Dead Center
B+: Battery Positive Voltage
C:
CDI: Capacitive Discharge Ignition
CKP: Crankshaft Position
CKT: Circuit
CLP: Clutch Lever Position
CMP: Camshaft Position
CO: Carbon Monoxide
CPU: Central Processing Unit
CVT: Continuously Variable Transmission
D:
DC: Direct Current
DOHC: Double Over Head Camshaft
DRL: Daytime Running Light
DTC: Diagnostic Trouble code
E:
ECM: Engine Control Module
ECT: Engine Coolant Temperature
ET: Engine Temperature
EVAP: Evaporative Emission
EX.: Exhaust
EXCV: Exhaust control valve
EXCVA: Exhaust control valve actuator
F:
FI: Fuel Injection, Fuel Injector
FP: Fuel pump
FPR: Fuel Pressure Regulator
FTPC: Fuel Tank Pressure Control
FWD: Forward
G:
GEN: Generator
GND: Ground
GP: Gear Position
H:
HC: Hydrocarbons
HI: High
HO2: Heated Oxygen
HU: Hydraulic Unit

I:

IAP: Intake Air Pressure
IAT: Intake Air Temperature
I.D.: Inside Diameter
IG: Ignition
IN.: Intake
ISC: Idle Speed Control

J:

JASO: Japanese Automobile Standards Organization

L:

LCD: Liquid Crystal Display
LED: Light Emitting Diode
LH: Left Hand

LO: Low

M:

Max: Maximum
MIL: Malfunction Indicator Lamp
Min.: Minimum
MTBE: Methyl Tertiary Butyl Ether

N:

NOx: Nitrogen Oxides

O:

O2: Oxygen
OHC: Over Head Camshaft
O.D.: Outside Diameter

P:

PAIR: Pulsed Secondary Air Injection
PCV: Positive Crankcase Ventilation
PP: Pulley Position

R:

RH: Right Hand
ROM: Read Only Memory
RON: Research Octane Number
RPM: Engine Speed

S:

SAE: Society of Automotive Engineers
SDS: Suzuki Diagnosis System
SRAD: Suzuki Ram Air Direct
STCS: Secondary Throttle Control System
STD: Standard
STP: Secondary Throttle Position
STV: Secondary Throttle Valve
STVA: Secondary Throttle Valve Actuator

T:

TC: Traction Control
TDC: Top Dead Center
TO: Tip-over
TP: Throttle Position
TPS: Throttle Position Sensor










Symbols

BENH23K20101002

Listed in the table below are the symbols indicating instructions and other information necessary for servicing. The meaning of each symbol is also included in the table.

NOTE

The table below shows generally used symbols, and includes some symbols not used in this manual.

Symbol	Definition
	Torque control required. Data beside it indicate specified torque.
	Apply oil. Use engine oil unless otherwise specified.
	Apply molybdenum oil solution. (Mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1 : 1)
	Apply SUZUKI SUPER GREASE A. 99000-25011
	Apply SUZUKI SUPER GREASE C. 99000-25030
	Apply SUZUKI MOLYBDENUM GREASE L. 99000-25280
	Apply SUZUKI MOLY PASTE. 99000-25140
	Apply SUZUKI SILICONE GREASE. 99000-25100
	Apply SUZUKI WATER RESISTANT GREASE EP2. 99000-25350
	Apply SUZUKI BOND 1207B. 99000-31140
	Apply SUZUKI BOND 1215. 99000-31110
	Apply SUZUKI BOND 1216B. 99000-31230
	Apply THREAD LOCK CEMENT 1303B. 99000-32030
	Apply THREAD LOCK CEMENT 1322D. 99000-32150
	Apply THREAD LOCK CEMENT 1342H. 99000-32160
	Apply THREAD LOCK CEMENT 1360. 99000-32130
	Use SUZUKI SUPER LONG LIFE COOLANT (BLUE). 99000-99032-20X Use SUZUKI LONG LIFE COOLANT (GREEN). 99000-99032-12X
	Apply or use fork oil.
	Apply or use brake fluid.
	Use special tool.
	Do not reuse.
	Note on reassembly.

0A-3 General Information:

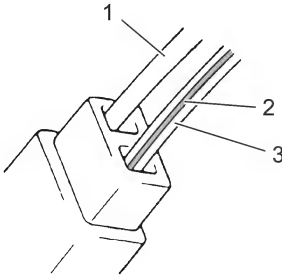
Wire Color Symbols

BENH23K20101003

Symbol	Wire Color	Symbol	Wire Color
B	Black	Lg	Light green
Bl	Blue	O	Orange
Br	Brown	P	Pink
Dbr	Dark brown	R	Red
Dg	Dark green	V	Violet
G	Green	W	White
Gr	Gray	Y	Yellow
Lbl	Light blue		

There are two kinds of colored wire used in this vehicle. One is single-colored wire and the other is dual-colored (striped) wire.

The single-colored wire uses only one color symbol (i.e. G). The dual-colored wire uses two color symbols (i.e. G/Y). The first symbol represents the base color of the wire and the second symbol represents the color of the stripe.



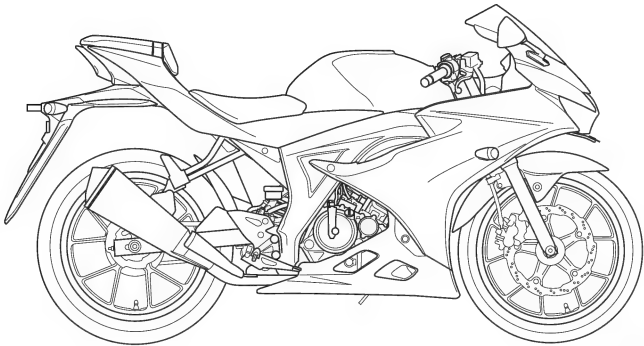
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1. G (Base color)	2. Y (Stripe color)	3. G (Base Color)
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Vehicle Side View

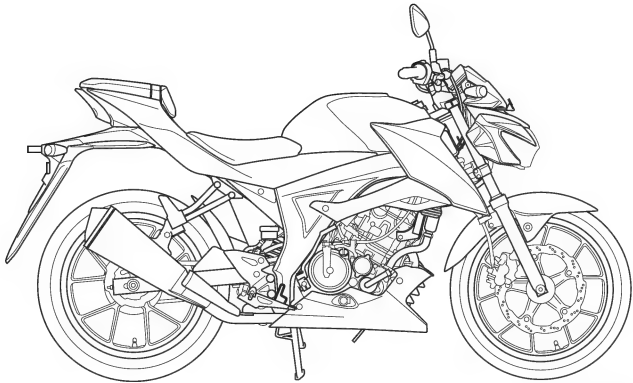
BENH23K20101004

SUZUKI GSX R 150 (model-2017)



IH23K1010001-02

SUZUKI GSX S 150 (model-2017)



IH23K2010001-01

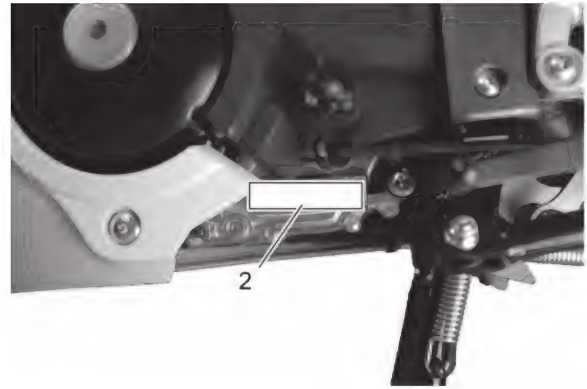
Vehicle Identification Number

BENH23K20101005

The frame serial number or V.I.N. (Vehicle Identification Number) is stamped on the right side of the frame down tube (1). The engine serial number is located on the left side of the crankcase (2).



IH23K1010002-03



IH23K1010003-02

Country and Area Codes

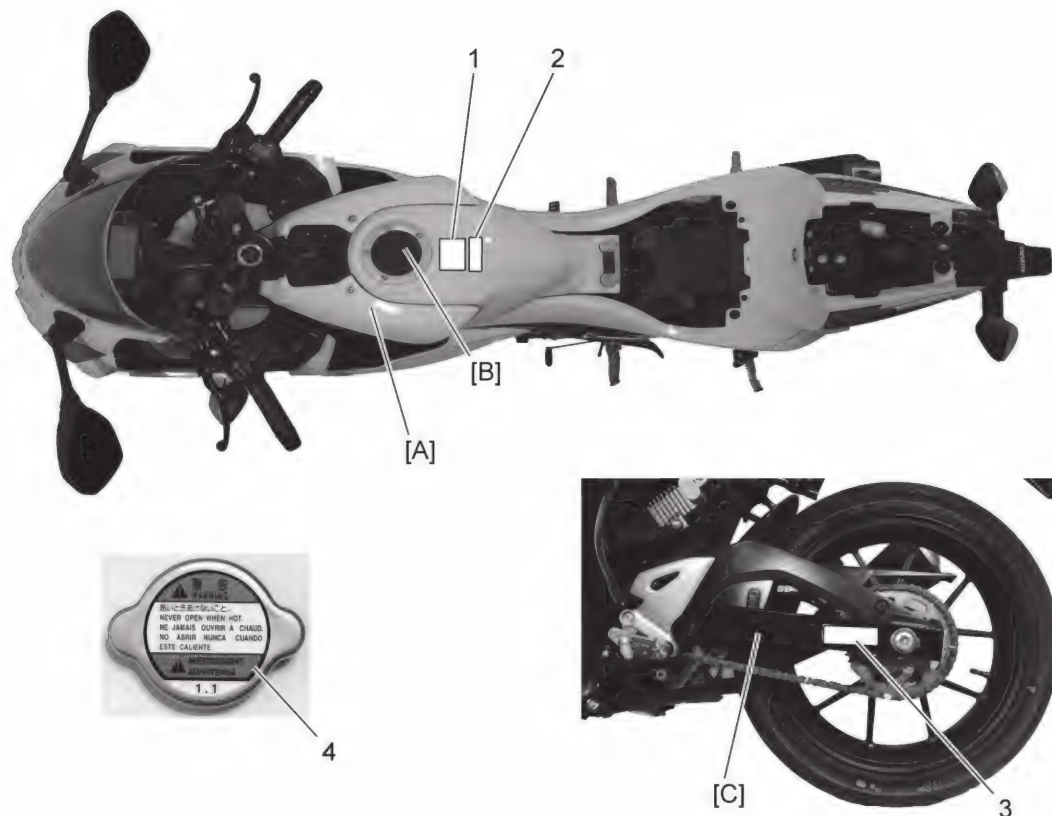
BENH23K20101006

The following code stand for the applicable country and area.

Code	Country or Area
P12	Indonesia

Warning, Caution and Information Labels Location

BENH23K20101007



IH23K1010005-02

[A]: Front box outer lid	1. General warning label	4. Radiator cap label
[B]: Fuel tank inlet tray	2. Fuel limitation label	
[C]: Swingarm	3. Tire information label	

Component Location

Electrical Components Location

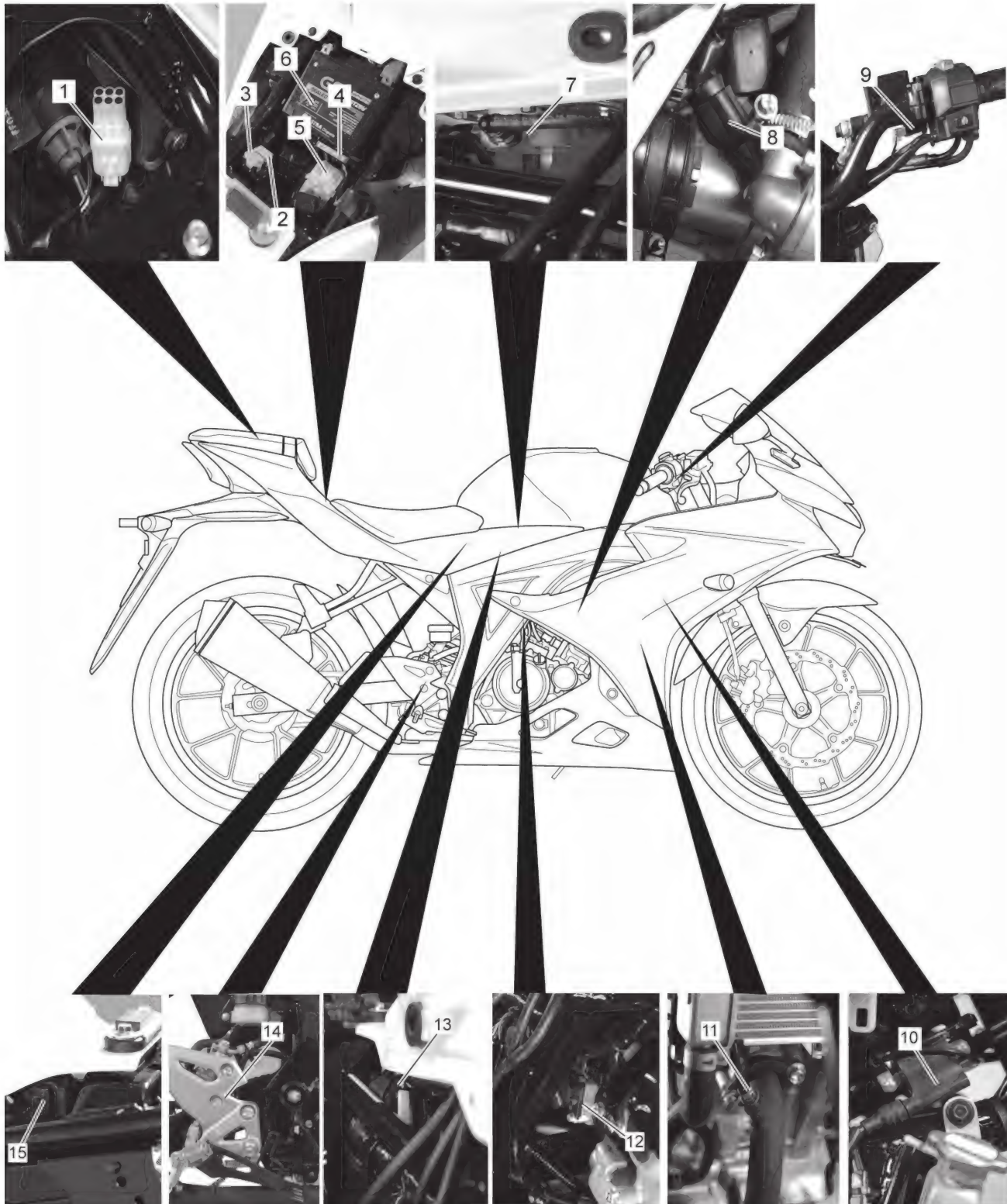
BENH23K20103001

GSX R 150 Model



IH23K1010006-04

1. Ignition switch	5. Regulator/rectifier	9. Speed sensor
2. Clutch lever position switch	6. ECM	10. Generator/CKP sensor
3. Cooling fan	7. Keyless control module	11. Horn
4. ECT sensor	8. GP switch	



IH23K1010007-04

1. Mode select coupler (6P)	6. Battery	11. O2 sensor
2. Cooling fan relay	7. Fuel pump/fuel level gauge	12. IAP/TP/IAT and ISC sensor
3. Sub relay	8. Fuel Injector	13. Turn signal relay
4. Fuse box	9. Front brake light switch	14. Rear brake light switch
5. Starter relay/Main fuse	10. Ignition coil	15. TO sensor

GSX S 150 Model



IH23K2010002-02

1. Ignition switch	5. Regulator/rectifier	9. Speed sensor
2. Clutch lever position switch	6. ECM	10. Generator/CKP sensor
3. Cooling fan	7. Keyless control module	11. Horn
4. ECT sensor	8. GP switch	



IH23K2010003-01

1. Mode select coupler (6P)	6. Battery	11. O2 sensor
2. Cooling fan relay	7. Fuel pump/fuel level gauge	12. IAP/TP/IAT and ISC sensor
3. Sub relay	8. Fuel Injector	13. Turn signal relay
4. Fuse box	9. Front brake light switch	14. Rear brake light switch
5. Starter relay/Main fuse	10. Ignition coil	15. TO sensor

Maintenance and Lubrication

Precautions

Precautions for Maintenance

BENH23K20200001

The “Periodic Maintenance Schedule Chart” lists the recommended intervals for all the required periodic service work necessary to keep the motorcycle operating at peak performance and economy. Maintenance intervals are expressed in terms of kilometers, miles and months for your convenience.

NOTE

More frequent servicing may be required on motorcycles that are used under severe conditions.

Scheduled Maintenance

Periodic Maintenance Schedule Chart

BENH23K20205001

NOTE

I = Inspect and clean, adjust, replace or lubricate as necessary.

R = Replace.

T = Tighten.

Item	Interval			
	months	1	6	12
	km	1000	4000	8000
	miles	600	2400	4800
Air cleaner element (I: (Page 0B-2)), R: (Page 0B-2))		—	I	I
		Replace every 12000 km (7200 miles).		
Exhaust pipe bolt and muffler bolt (T: (Page 0B-2))		T	—	T
Valve clearance (I: (Page 0B-2))		—	—	I
Spark plug (I: (Page 0B-2), R: (Page 0B-2))		—	I	R
Fuel hose (I: (Page 0B-2), R: (Page 0B-2))		—	I	I
		Replace every 4 years.		
Engine oil (R: (Page 0B-2))		R	R	R
Engine oil filter (R: (Page 0B-2))		R	—	R
Throttle cable play (I: (Page 0B-2))		I	I	I
Engine coolant (R: (Page 0B-2))	“SUZUKI SUPER LONG LIFE COOLANT” (Blue)	Replace every 4 years or 16000 km (9600 miles).		
	“SUZUKI LONG LIFE COOLANT” (Green) or an engine coolant other than “SUZUKI SUPER LONG LIFE COOLANT” (Blue)	Replace every 2 years or 8000 km (4800 miles).		
Radiator hose (I: (Page 0B-2))		—	I	I
Clutch cable play (I: (Page 0B-2))		—	I	I
Drive chain (I: (Page 0B-2), I: (Page 0B-2))		I	I	I
		Clean and lubricate every 1000 km (600 miles).		
Brake (I: (Page 0B-2))		I	I	I
Brake hose (I: (Page 0B-3), R: (Page 0B-3))		—	I	I
		Replace every 4 years.		
Brake fluid (I: (Page 0B-3), R: (Page 0B-3))		—	I	I
		Replace every 2 years.		
Tires (I: (Page 0B-3))		—	I	I
Steering (I: (Page 0B-3))		I	—	I
Front forks (I: (Page 0B-3))		—	—	I
Rear suspension (I: (Page 0B-3))		—	—	I
Chassis bolts and nuts (T: (Page 0B-3))		T	T	T
Lubrication (I: (Page 0B-8))		Lubricate every 1000 km (600 miles).		

Repair Instructions

Air Cleaner Element Inspection

BENH23K20206001

Refer to "Air Cleaner Element Inspection" in Section 1D (Page 1D-9).

Air Cleaner Element Replacement

BENH23K20206002

Refer to "Air Cleaner Box Removal and Installation" in Section 1D (Page 1D-9).

Exhaust Pipe Bolt and Muffler Bolt Inspection

BENH23K20206003

Refer to "Exhaust System Inspection" in Section 1K (Page 1K-4).

Valve Clearance Inspection and Adjustment

BENH23K20206004

Refer to "Valve Clearance Inspection and Adjustment" in Section 1D (Page 1D-24).

Spark Plug Inspection

BENH23K20206005

Refer to "Spark Plug Inspection and Cleaning" in Section 1H (Page 1H-6).

Spark Plug Replacement

BENH23K20206006

Refer to "Spark Plug Removal and Installation" in Section 1H (Page 1H-5).

Fuel Hose Inspection

BENH23K20206007

Refer to "Fuel Pressure Inspection" in Section 1G (Page 1G-4).

Fuel Hose Replacement

BENH23K20206008

Refer to "Fuel Feed Hose Removal and Installation" in Section 1G (Page 1G-6).

Engine Oil Replacement

BENH23K20206009

Refer to "Engine Oil Replacement" in Section 1E (Page 1E-5).

Engine Oil Filter Replacement

BENH23K20206010

Refer to "Oil Filter Replacement" in Section 1E (Page 1E-6).

Throttle Cable Play Inspection and Adjustment

BENH23K20206011

Refer to "Throttle Cable Play On-Vehicle Inspection and Adjustment" in Section 1D (Page 1D-12).

Engine Coolant Replacement

BENH23K20206012

Refer to "Engine Coolant Replacement" in Section 1F (Page 1F-5).

Radiator Hose Inspection

BENH23K20206013

Refer to "Coolant Hose Inspection" in Section 1F (Page 1F-7).

Clutch Cable Play Inspection and Adjustment

BENH23K20206014

Refer to "Clutch Cable Play On-Vehicle Inspection and Adjustment" in Section 5C (Page 5C-3).

Drive Chain Inspection and Adjustment

BENH23K20206015

Refer to "Drive Chain Inspection and Adjustment" in Section 3A (Page 3A-2).

Drive Chain Cleaning and Lubricating



BENH23K20206016

Refer to "Drive Chain Cleaning and Lubricating" in Section 3A (Page 3A-3).



Brake System Inspection

BENH23K20206017

Brake Pad

- Front:  (Page 4B-2)
- Rear:  (Page 4C-1)

Brake Disc

- Front:  (Page 4B-8)
- Rear:  (Page 4C-6)

Brake Light Switch

Refer to "Rear Brake Light Switch Inspection" in Section 4A (Page 4A-5).

Brake Pedal Height

Refer to "Brake Pedal Height Inspection and Adjustment" in Section 4A (Page 4A-8).

Brake Fluid Inspection

BENH23K20206018

Refer to “Brake Fluid Level Check” in Section 4A (Page 4A-6).

Brake Fluid Replacement

BENH23K20206019

Refer to “Brake Fluid Replacement” in Section 4A (Page 4A-11).



Brake Hose Inspection

BENH23K20206020

Refer to “Brake Hose Inspection” in Section 4A (Page 4A-6).

Brake Hose Replacement

BENH23K20206021

- Front:  (Page 4A-12)
- Rear:  (Page 4A-13)

Chassis Bolt and Nut Inspection

BENH23K20206026

Check that all chassis bolts and nuts are tightened to their specified torque.

Tire Inspection

BENH23K20206022

Refer to “Tire Inspection and Cleaning” in Section 2D (Page 2D-11).

Steering System Inspection

BENH23K20206023

Refer to “Steering On-Vehicle Inspection” in Section 6B (Page 6B-15).

Front Fork Inspection

BENH23K20206024

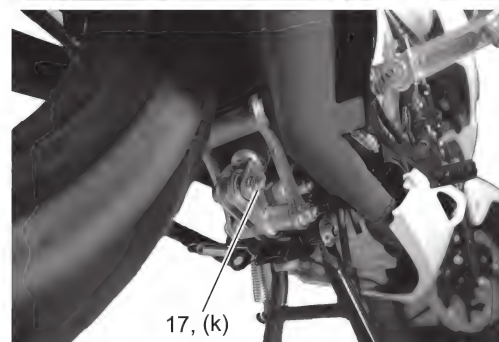
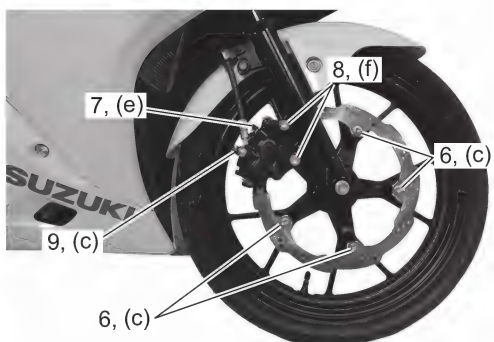
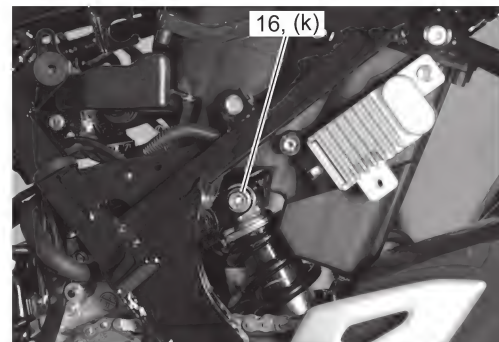
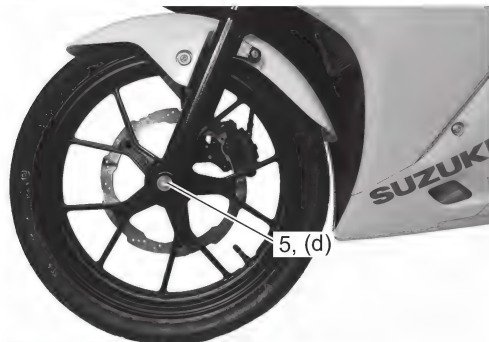
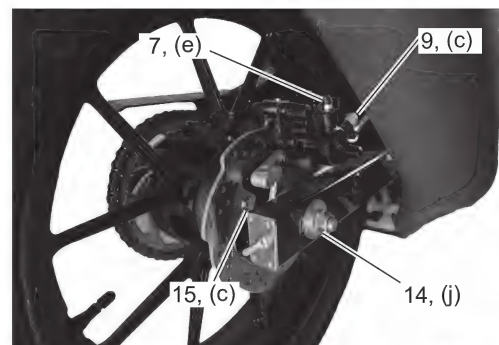
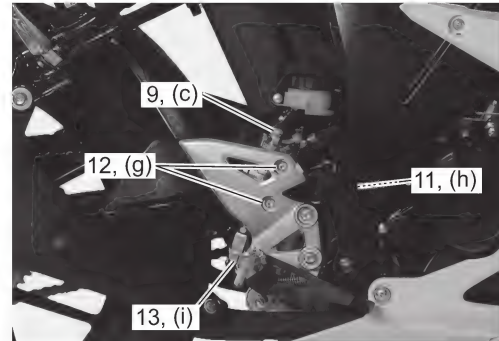
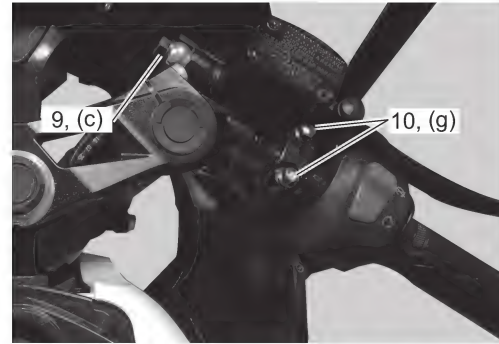
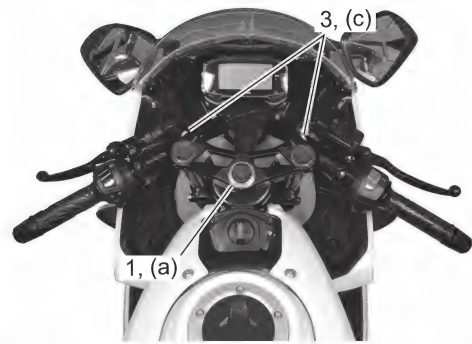
Refer to “Front Fork On-Vehicle Inspection” in Section 2B (Page 2B-2).

Rear Suspension Inspection

BENH23K20206025

Refer to “Rear Suspension On-vehicle Inspection” in Section 2C (Page 2C-2).

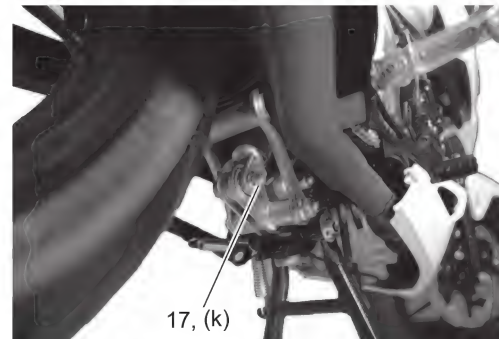
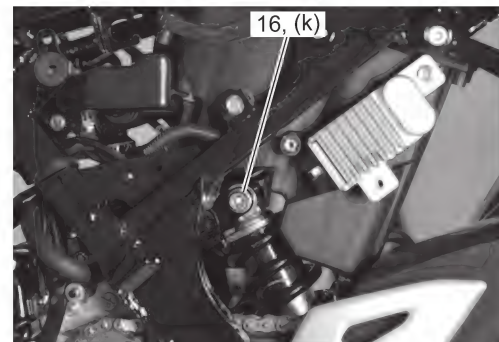
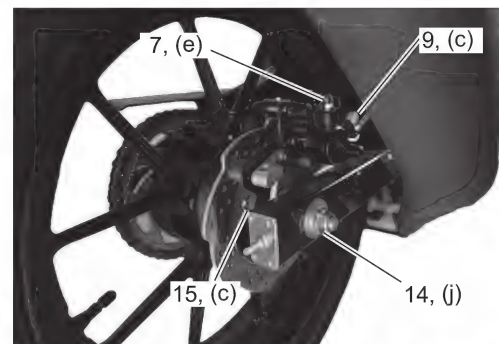
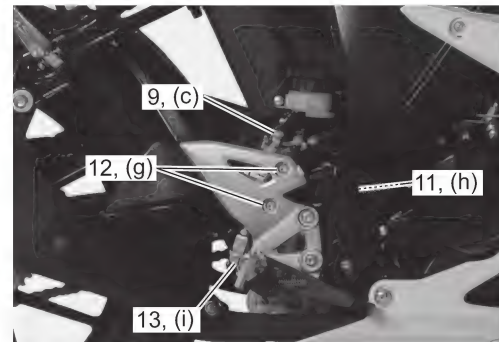
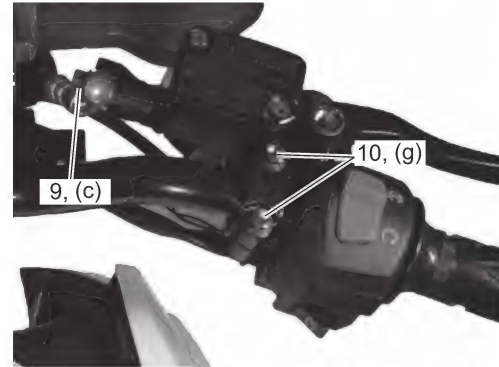
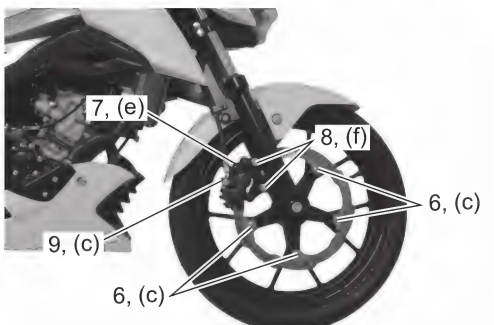
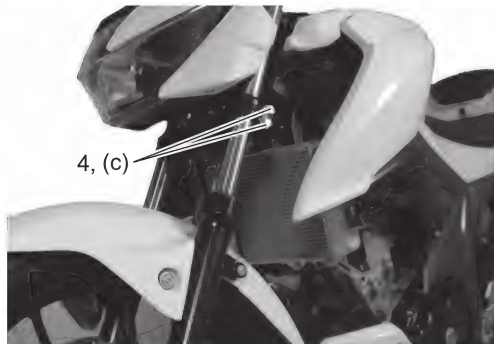
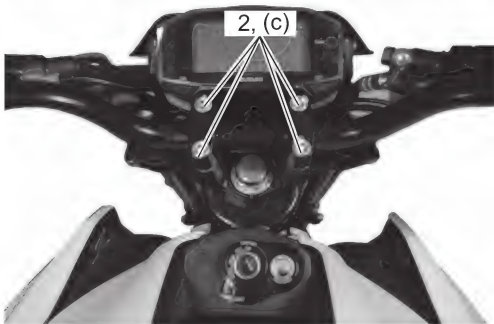
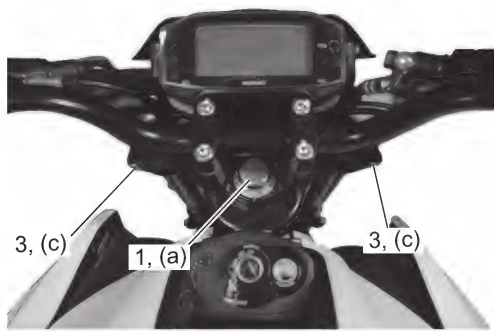
GSX R 150 Model



0B-5 Maintenance and Lubrication:

1. Steering stem head nut	11. Swingarm pivot nut	(d): 53 N·m (5.4 kgf-m, 39.0 lbf-ft)
2. Handlebar bolt	12. Rear brake master cylinder bolt	(e): 7.5 N·m (0.76 kgf-m, 5.55 lbf-ft)
3. Front fork upper clamp bolt	13. Rear brake master cylinder rod lock-nut	(f): 25 N·m (2.5 kgf-m, 18.5 lbf-ft)
4. Front fork lower clamp bolt	14. Rear axle nut	(g): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
5. Front axle nut	15. Rear brake disc bolt	(h): 93 N·m 9.5 kgf-m, 68.5 lbf-ft)
6. Front brake disc bolt	16. Rear shock absorber upper mounting bolt	(i): 18 N·m (1.8 kgf-m, 13.5 lbf-ft)
7. Brake air bleeder valve	17. Rear shock absorber lower mounting nut	(j): 54 N·m (5.5 kgf-m, 40.0 lbf-ft)
8. Front brake caliper mounting bolt	(a): 30 N·m (3.1 kgf-m, 22.5 lbf-ft)	(k): 50 N·m (5.1 kgf-m, 37.0 lbf-ft)
9. Brake hose union bolt	(b): 28 N·m (2.9 kgf-m, 21.0 lbf-ft)	
10. Front brake master cylinder holder bolt	(c): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	

GSX S 150 Model



0B-7 Maintenance and Lubrication:

1. Steering stem head nut	11. Swingarm pivot nut	(d): 53 N·m (5.4 kgf-m, 39.0 lbf-ft)
2. Handle holder clamp bolt	12. Rear brake master cylinder bolt	(e): 7.5 N·m (0.76 kgf-m, 5.55 lbf-ft)
3. Front fork upper clamp bolt	13. Rear brake master cylinder rod lock-nut	(f): 25 N·m (2.5 kgf-m, 18.5 lbf-ft)
4. Front fork lower clamp bolt	14. Rear axle nut	(g): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
5. Front axle nut	15. Rear brake disc bolt	(h): 93 N·m 9.5 kgf-m, 68.5 lbf-ft)
6. Front brake disc bolt	16. Rear shock absorber upper mounting bolt	(i): 18 N·m (1.8 kgf-m, 13.5 lbf-ft)
7. Brake air bleeder valve	17. Rear shock absorber lower mounting nut	(j): 54 N·m (5.5 kgf-m, 40.0 lbf-ft)
8. Front brake caliper mounting bolt	(a): 30 N·m (3.1 kgf-m, 22.5 lbf-ft)	(k): 50 N·m (5.1 kgf-m, 37.0 lbf-ft)
9. Brake hose union bolt	(b): 28 N·m (2.9 kgf-m, 21.0 lbf-ft)	
10. Front brake master cylinder holder bolt	(c): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	

Lubrication Points

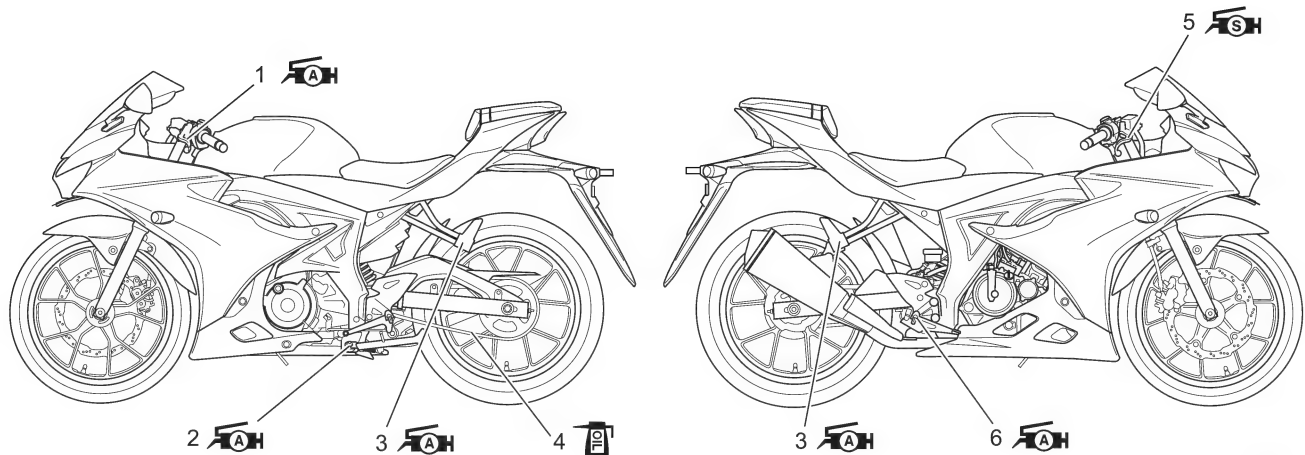
BENH23K20206027

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle.
Major lubrication points are indicated as follows.

NOTE

- Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.
- Lubricate exposed parts which are subject to rust, with a rust preventative spray whenever the motorcycle has been operated under wet or rainy conditions.

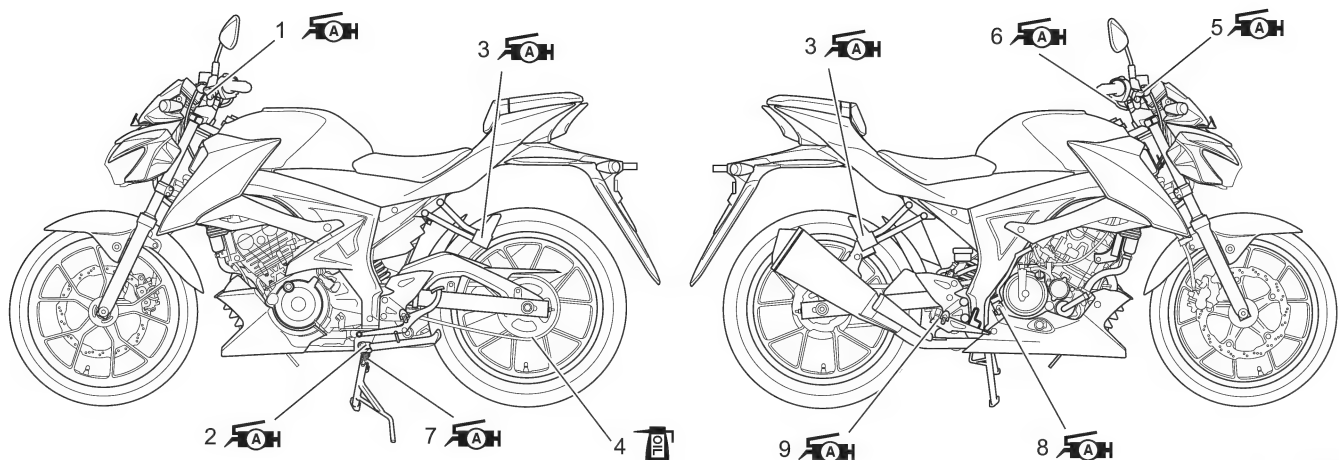
GSX R 150 Model



IH23K1020002-01

1. Clutch lever pivot	4. Drive chain	: Apply oil.
2. Side-stand pivot and spring hook	5. Brake lever pivot	: Apply grease.
3. Pillion footrest pivot	6. Brake pedal pivot	: Apply silicone grease.

GSX S 150 Model



IH23K2020001-02

1. Clutch lever pivot	5. Front brake lever pivot	9. Rear brake pedal pivot
2. Side-stand pivot and spring hook	6. Throttle cable	: Apply oil.
3. Pillion footrest pivot	7. Center stand pivot and spring hook	: Apply grease.
4. Drive chain	8. Kick starter lever pivot	: Apply silicone grease.

Special Tools and Equipment

Recommended Service Material

BENH23K20208001

NOTE

Required service material(s) is also described in:
“Lubrication Points” (Page 0B-8)

Service Data

Precautions

Precautions for Service Data

BENH23K20300001

NOTE

Specifications and service data are subject to change without notice.

Specifications

Specifications

BENH23K20307001

GSX R 150 Model

Dimensions and curb mass

Item	Specification	Remark
Overall length	2020 mm (79.53 in)	—
Overall width	700 mm (27.56 in)	—
Overall height	1075 mm (42.32 in)	—
Wheelbase	1300 mm (51.18 in)	—
Curb mass	131 kg (291.1 lbs)	—

GSX S 150 Model

Dimensions and curb mass

Item	Specification	Remark
Overall length	2020 mm (79.53 in)	—
Overall width	745 mm (29.33 in)	—
Overall height	1040 mm (40.94 in)	—
Wheelbase	1300 mm (51.18 in)	—
Curb mass	130 kg (286.60 lbs)	—

Engine

Item	Specification	Remark
Type	Four-stroke, liquid-cooled, DOHC	—
Number of cylinders	1	—
Bore	62.0 mm (2.441 in)	—
Stroke	48.8 mm (1.921 in)	—
Displacement	147 cm ³ (8.97 cu. in)	—
Compression ratio	11.5 : 1	—
Fuel system	Fuel injection	—
Air cleaner	Paper filter	—
Starter system	Kick and electric	—
Lubrication system	Wet sump	—

Drive train

Item	Specification	Remark
Clutch	Wet multi-plate type	—
Transmission	6-speed constant mesh	—
Gearshift pattern	1-down, 5-up	—
Primary reduction ratio	3.285 (69/21)	—
Gear ratios	Low	2.923 (38/13)
	2nd	1.933 (29/15)
	3rd	1.476 (31/21)
	4th	1.217 (28/23)
	5th	1.045 (23/22)
	Top	0.925 (25/27)

0C-2 Service Data:

Item	Specification	Remark
Final reduction ratio	3.000 (45/15)	—
Drive chain	RK428KLO, 122 links	—

Chassis

Item		Specification	Remark
Front suspension		Telescopic, coil spring, oil damped	—
Rear suspension		Swingarm type, coil spring, oil damped	—
Front fork stroke		110 mm (4.33 in)	—
Rear wheel travel		115 mm (4.53 in)	—
Steering angle	GSX R 150	35°	—
	GSX S 150	40°	—
Caster		25.5°	—
Front brake		Disc brake	—
Rear brake		Disc brake	—
Front tire size		90/80-17M/C 46P	—
Rear tire size		130/70-17M/C 62P	—

Electrical

Item		Specification	Remark
Ignition type		Electronic ignition (Transistorized)	—
Spark plug		NGK MR8E-9 or U24EPR-N9	—
Battery		12 V 18 kC (5 Ah)/10 HR	—
Generator		Single-phase A.C. generator	—
Main fuse		20 A	—
Headlight		LED	—
Position light		LED	—
Brake light/Tail light		12 V 21/5 W	—
Turn signal light		12 V 10 W	—
License plate light		LED	—
Tachometer light		LED	—
Speedometer light		LED	—
Turn signal indicator light		LED	—
Neutral indicator light		LED	—
High beam indicator light		LED	—
Engine RPM indicator light		LED	—
Keyless indicator light		LED	—

Capacities

Item		Specification	Remark
Fuel tank		11 L (2.90 US gal, 2.41 Imp gal)	—
Engine oil	Oil change	1300 ml (1.37 US qt, 1.14 Imp qt)	—
	With filter change	1400 ml (1.48 US qt, 1.23 Imp qt)	—
	Overhaul	1500 ml (1.59 US qt, 1.32 Imp qt)	—
Coolant		1260 ml (1.33 US qt, 0.28 Imp gal)	—

Service Data

BENH23K20307002

Engine Electrical Devices

Item	Specification	Standard	Limit
IAP sensor power supply voltage		4.75 – 5.25 V	—
IAP sensor output voltage	At 1 atm.	3.88 – 4.12 V	—
IAT sensor power supply voltage		4.75 – 5.25 V	—
IAT sensor resistance	23 °C (73.4 °F)	2.169 – 2.557 Ω	—
ECT sensor resistance	20 °C (68 °F)	2320 – 2590 Ω	—
	80 °C (176 °F)	310 – 326 Ω	
TP sensor power supply voltage		4.75 – 5.25 V	—
TP sensor output voltage	Closed	0.65 – 0.75 V	—
	Opened	3.80 – 4.00 V	
O2 sensor output voltage	Idle speed	0.3 – 1.2 V	—
CKP sensor peak voltage	When cranking	2.0 V or more	—
CKP sensor resistance	20 °C (68 °F)	Approx. 230 Ω	—
TO sensor power supply voltage		4.5 – 5.5 V	—
TO sensor voltage	Normal	0.4 – 1.4 V	—
	Leaning 65°	3.7 – 4.4 V	
TO sensor resistance		19313 – 19507 Ω	—
ECM power supply voltage		Battery voltage	—
Speed sensor power supply voltage		Battery voltage	—
ISC valve resistance	20 °C (68 °F)	Approx. 20 Ω	—

Engine Mechanical

Item	Specification	Standard	Limit
Throttle body I.D. No		23K0	—
Throttle body bore size		32 mm (1.26 in)	—
Throttle cable play		2.0 – 4.0 mm (0.079 – 0.157 in)	—
Idle speed	When engine warmed	1500 \pm 100 r/min	—
Compression pressure		1000 – 1400 kPa (10.2 – 14.2 kgf/cm ² , 145 – 203 psi)	800 kPa (8.16 kgf/cm ² , 116 psi)
Cam height	Intake	35.15 – 35.25 mm (1.384 – 1.387 in)	34.85 mm (1.372 in)
	Exhaust	34.38 – 34.42 mm (1.354 – 1.355 in)	34.08 mm (1.341 in)
Camshaft journal oil clearance	Intake	0.032 – 0.066 mm (0.0013 – 0.0025 in)	0.150 mm (0.059 in)
	Exhaust	0.032 – 0.066 mm (0.0013 – 0.0025 in)	0.150 mm (0.059 in)
Camshaft journal holder I.D.	Intake	22.012 – 22.025 mm (0.8667 – 0.8671 in)	—
	Exhaust	22.012 – 22.025 mm (0.8667 – 0.8671 in)	
Camshaft journal O.D.	Intake	21.959 – 21.980 mm (0.8646 – 0.8653 in)	—
	Exhaust	21.959 – 21.980 mm (0.8646 – 0.8653 in)	
Camshaft runout	Intake & Exhaust	—	0.10 mm (0.004 in)
Cam chain pin	At arrow “3”	15th pin	—
Valve clearance	When engine cold	Intake 0.10 – 0.20 mm (0.0040 – 0.0078 in)	—
		Exhaust 0.20 – 0.30 mm (0.0079 – 0.0118 in)	
Valve diameter	Intake	24 mm (0.94 in)	—
	Exhaust	21 mm (0.83 in)	
Valve stem runout	Intake & Exhaust	—	0.05 mm (0.002 in)
Valve head radial runout	Intake & Exhaust	—	0.03 mm (0.001 in)

0C-4 Service Data:

Item	Specification		Standard	Limit
Valve head thickness	Intake		—	0.5 mm (0.019 in)
	Exhaust		—	0.5 mm (0.019 in)
Valve stem O.D.	Intake		4.475 – 4.490 mm (0.1762 – 0.1767 in)	—
	Exhaust		4.455 – 4.470 mm (0.1754 – 0.1759 in)	—
Valve seat width	Intake		0.9 – 1.1 mm (0.036 – 0.043 in)	—
	Exhaust		1.0 – 1.2 mm (0.040 – 0.047 in)	—
Valve guide I.D.	Intake		4.500 – 4.512 mm (0.1772 – 0.1776 in)	—
	Exhaust		4.500 – 4.512 mm (0.1772 – 0.1776 in)	—
Valve guide to valve stem clearance	Intake		0.010 – 0.037 mm (0.0004 – 0.0014 in)	—
	Exhaust		0.030 – 0.057 mm (0.0012 – 0.0022 in)	—
Valve spring free length	Intake		—	41.8 mm (1.65 in)
	Exhaust		—	41.8 mm (1.65 in)
Valve spring pre-load	When compressed to 38.10 mm (1.500 in)	Intake	138.7 – 159.5 N (14.2 – 16.2 kg, 31.2 – 35.8 lbf)	—
		Exhaust	138.7 – 159.5 N (14.2 – 16.2 kg, 31.2 – 35.8 lbf)	—
Cylinder head distortion			—	0.05 mm (0.002 in)
Cylinder distortion			—	0.05 mm (0.002 in)
Cylinder bore			62.000 – 62.015 mm (2.4410 – 2.4415 in)	No nicks or Scratches
Piston diameter	Measure at 12 mm (0.47 in) from the skirt end.		61.970 – 61.985 mm (2.4398 – 2.4403 in)	61.880 mm (2.4363 in)
Piston to cylinder clearance			0.025 – 0.035 mm (0.0010 – 0.0030 in)	0.120 mm (0.0047 in)
Piston ring to groove clearance	1st		—	0.180 mm (0.0071 in)
	2nd		—	0.150 mm (0.0059 in)
Piston ring groove width	1st		0.81 – 0.83 mm (0.0319 – 0.0327 in)	—
	2nd		0.81 – 0.83 mm (0.0319 – 0.0327 in)	—
	Oil		1.51 – 1.53 mm (0.0594 – 0.0602 in)	—
Piston ring thickness	1st		0.77 – 0.79 mm (0.0303 – 0.0311 in)	—
	2nd		0.77 – 0.79 mm (0.0303 – 0.0311 in)	—
Piston ring free end gap	1st		Approx. 8.5 mm (0.33 in)	6.8 mm (0.27 in)
	2nd		Approx. 6.3 mm (0.25 in)	5.0 mm (0.20 in)
Piston ring end gap	1st		0.06 – 0.18 mm (0.003 – 0.007 in)	0.50 mm (0.020 in)
	2nd		0.18 – 0.30 mm (0.008 – 0.011 in)	0.50 mm (0.020 in)
Piston pin bore I.D.			15.002 – 15.008 mm (0.5907 – 0.5908 in)	15.030 mm (0.5917 in)
Piston pin O.D.			14.995 – 15.000 mm (0.5904 – 0.5905 in)	14.980 mm (0.5898 in)

Item	Specification	Standard	Limit
Conrod small end I.D.		15.006 – 15.024 mm (0.5908 – 0.5914 in)	15.040 mm (0.5921 in)
Conrod deflection		—	3.0 mm (0.11 in)
Conrod big end side clearance		0.10 – 0.45 mm (0.004 – 0.017 in)	1.0 mm (0.039 in)
Conrod big end width		16.95 – 17.00 mm (0.668 – 0.669 in)	—
Crank web to web width		52.90 – 53.10 mm (2.083 – 2.090 in)	—
Crankshaft runout		—	0.080 mm (0.0031 in)

Engine Lubrication System

Item	Specification	Standard	Limit
Oil pressure	At 60 °C (140 °F), 3000 r/min	35 – 65 kPa (0.36 – 0.66 kg/cm ² , 5.08 – 9.42 psi)	—
Necessary amount of engine oil	Oil change	1300 ml (1.37 US qt, 1.14 Imp qt)	—
	Oil and filter change	1400 ml (1.48 US qt, 1.23 Imp qt)	
	Engine overhaul	1500 ml (1.59 US qt, 1.32 Imp qt)	

Engine Cooling System

Item	Specification	Standard	Limit
Engine coolant	Engine side	Approx. 1010 ml (2.13 US qt, 0.89 Imp, qt)	—
	Reserve tank side	Approx. 250 ml (0.26 US qt, 0.22 Imp, qt)	
Radiator cap valve opening pressure		107.9 – 137.3 kPa (1.1 – 1.4 kgf/cm ² , 15.7 – 19.9 psi)	—
Cooling fan relay power supply voltage		Battery voltage	—
Cooling fan operating temperature	OFF → ON	Approx. 105 °C (221 °F)	—
	ON → OFF	Approx. 100 °C (212 °F)	
Thermostat valve opening temperature		85.5 – 88.5 °C (185.9 – 191.3 °F)	—
Thermostat valve lift	95 °C (203 °F)	3.0 mm (0.11 in) or more	—

Fuel System

Item	Specification	Standard	Limit
Fuel injector power supply voltage		Battery voltage	
Fuel injector resistance	20 °C (68 °F)	11.5 – 12.5 Ω	—
FP discharge amount	Per 10 seconds	56 ml (1.89 US oz, 1.97 Imp oz) or more	—
Fuel pressure		289 – 299 kPa (2.95 – 3.04 kgf/cm ² , 42.0 – 43.3 psi)	—

0C-6 Service Data:**Ignition System**

Item	Specification	Standard	Limit
Spark plug	Type	NGK / MR8E-9 or U24EPR-N9	—
	Gap	0.8 – 0.9 mm (0.031 – 0.035 in)	
Spark performance	At 1 atm	8 mm (0.3 in) or more	—
Ignition coil primary peak voltage		150 V or more	—
Ignition coil resistance	Primary	1.84 – 2.76 Ω	—
	Secondary	10.01 – 18.59 k Ω	

Starting System

Item	Specification	Standard	Limit
Stator motor brush length		5.0 mm (0.20 in)	3.5 mm (0.14 in)
Starter relay resistance		3 – 6 Ω	—

Charging System

Item	Specification		Standard	Limit
Battery leakage current			3 mA or less	—
Regulated voltage	Charging output	At 5000 r/min	13.5 – 15.2 V	—
Generator coil resistance			Approx. 0.6 Ω	—
Generator no-load voltage	When engine cold	At 5000 r/min	100 V (AC) or more	—
Reaching time	Standard charging		0.3 A for 5 to 10 hours	—
	Fast charging		3 A for 0.5 hour	
Generator Max. output	At 5000 r/min		Approx. 125 W	—
Battery	Type designation		GTZ6V/NTZ6V	—
	Capacity		12 V 18 kC (5 Ah)/10 HR	
	Standard electrolyte S.G.	At 20 °C (68 °F)	1.32	

Front Suspension

Item	Specification	Standard	Limit
Front fork inner tube O.D.		31 mm (1.2 in)	—
Front fork oil level	Without spring, inner/outer tube fully compressed	122 mm (4.80 in)	—
Front fork spring free length		387 mm (15.2 in)	346 mm (13.6 in)
Front fork oil capacity	Each leg	109 ml (3.69 US oz, 3.84 Imp oz)	—

Rear Suspension

Item	Specification	Standard	Limit
Swingarm pivot shaft runout		—	0.6 mm (0.023 in)

Wheels and Tires

Item	Specification		Standard	Limit
Wheel rim runout	Front	Axial & Radial	—	2.0 mm (0.08 in)
	Rear	Axial & Radial	—	2.0 mm (0.08 in)
Wheel axle runout	Front & Rear		—	0.25 mm (0.010 in)
Tire size	Front		90/80-17 M/C 46P, tubeless	—
	Rear		130/70-17 M/C 62P, tubeless	
Tire type	Front		IRC/NR88	—
	Rear		IRC/NR88	
Tire tread depth	Recommend depth	Front	—	1.6 mm (0.06 in)
		Rear	—	2.0 mm (0.08 in)

Item	Specification		Standard	Limit
Cold inflation tire pressure	Solo riding	Front	200 kPa (2.00 kgf/cm ² , 29 psi)	—
		Rear	225 kPa (2.25 kgf/cm ² , 33 psi)	
	Dual riding	Front	200 kPa (2.00 kgf/cm ² , 29 psi)	—
		Rear	280 kPa (2.80 kgf/cm ² , 41 psi)	
Wheel rim size	Front		17 M/C × MT 2.15	—
	Rear		17 M/C × MT 3.50	

Drive Chain / Drive Train / Drive Shaft

Item	Specification	Standard	Limit
Drive chain	Type	RK 428KLO	—
	Links	122 Links	—
Drive chain 20-pitch length		—	1003.3 mm (39.50 in)
Drive chain slack	On stand position (with paddock stand)	20 – 30 mm (0.8 – 1.2 in)	—

Brake Control System and Diagnosis

Item	Specification	Standard	Limit
Rear brake pedal height		16.4 – 26.4 mm (0.65 – 1.03 in)	—
Master cylinder bore / piston diameter	Front	Approx. 13 mm (0.51 in)	—
	Rear	Approx. 12.7 mm (0.50 in)	

Front Brakes

Item	Specification	Standard	Limit
Front brake disc thickness		3.8 – 4.2 mm (0.15 – 0.16 in)	3.5 mm (0.14 in)
Front brake disc runout		—	0.30 mm (0.012 in)
Front brake caliper cylinder bore / piston diameter		Approx. 26 mm (1.02 in)	—

Rear Brakes

Item	Specification	Standard	Limit
Rear brake disc thickness		3.8 – 4.2 mm (0.15 – 0.16 in)	3.5 mm (0.14 in)
Rear brake disc runout		—	0.3 mm (0.012 in)
Rear brake caliper cylinder bore / piston diameter		Approx. 32 mm (1.26 in)	—

Manual Transmission

Item	Specification	Standard	Limit
Gearshift fork to groove clearance	No.1	0.1 – 0.3 mm (0.004 – 0.011 in)	0.5 mm (0.019 in)
	No.2	0.1 – 0.3 mm (0.004 – 0.011 in)	0.5 mm (0.019 in)
Gearshift fork groove width	No.1	5.5 – 5.6 mm (0.217 – 0.220 in)	—
	No.2	5.0 – 5.1 mm (0.197 – 0.200 in)	
Gearshift fork thickness	No.1	5.3 – 5.4 mm (0.209 – 0.212 in)	—
	No.2	4.8 – 4.9 mm (0.189 – 0.192 in)	

0C-8 Service Data:

Item	Specification	Standard	Limit
Gearshift lever height		18 – 32 mm (0.71 – 1.25 in)	—

Clutch

Item	Specification	Standard	Limit
Clutch lever play		10 – 14 mm (0.4 – 0.5 in)	—
Drive plate thickness		2.9 – 3.1 mm (0.115 – 0.122 in)	2.6 mm (0.103 in)
Drive plate claw width	With groove	11.9 – 12.0 mm (0.469 – 0.472 in)	11.4 mm (0.449 in)
	Without groove	11.8 – 12.0 mm (0.465 – 0.472 in)	11.3 mm (0.445 in)
Driven plate distortion		—	0.10 mm (0.004 in)
Clutch spring free length		32.5 mm (1.28 in)	30.9 mm (1.22 in)

Steering / Handlebar

Item	Specification	Standard	Limit
Steering tension initial force		2 – 5 N (0.21 – 0.50 kgf, 0.50 – 1.12 lbf)	—

Wiring Systems

Item	Specification	Standard	Limit
Fuse size	MAIN	20 A	—
	SUB	10 A	—
	FAN	10 A	—

Lighting Systems

Item	Specification	Standard	Limit
Headlight	HI	LED	—
	LO	LED	—
Position light		LED	—
Brake light / Taillight		12 V 21/5 W	—
Turn signal light		12 V 10 W	—
License light		LED	—

Combination Meter / Others

Item	Specification	Standard	Limit
Instrument panel light		LED	—
MIL		LED	—
ECT indicator light		LED	—
Turn signal indicator light		LED	—
Hi beam indicator light		LED	—
Neutral indicator light		LED	—
Engine RPM indicator light		LED	—

Fasteners Information

BENH23K20307003

Metric Fasteners

Most of the fasteners used for this vehicle are JIS-defined and ISO-defined metric fasteners. When replacing any fasteners, it is most important that replacement fasteners are of the correct diameter, thread pitch and strength.

NOTICE

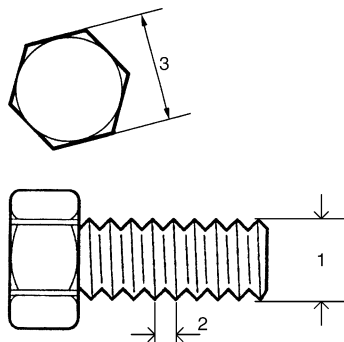
Combining male and female fasteners with different thread pitches will damage both fasteners.

It is important to note that, even when the nominal diameter (1) of the threads is the same, JIS-defined and ISO-defined fasteners may be different in thread pitch (2) or width across flats (3). Refer to the following table for these differences.

Before installing a fastener, check it for correct thread pitch and then, screw it in or on the mating fastener by hand. If the fastener is too tight to turn by hand, its thread pitch may be different from that of the mating fastener.

JIS-TO-ISO main fasteners comparison table

		Nominal diameter				
		M6	M8	M10	M12	M14
JIS	Thread pitch	1.0	1.25	1.25	1.25	1.5
	Width across flats	10	12	14	17	19
ISO	Thread pitch	1.0	1.25	1.5	1.5	1.5
	Width across flats	10	13	16	18	21



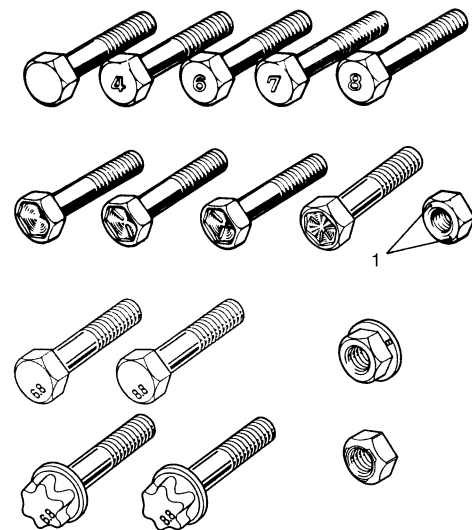
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Fastener Strength Identification

Most commonly used strength classes of metric fasteners are 4T, 6.8, 7T and 8.8. Strength class is indicated by a number or radial line(s) embossed on the head of each bolt. Some metric nuts have a punched number, 6 or 8 on their end surfaces. Figure shows different strength markings.

When replacing metric fasteners, use bolts and nuts of the same strength class as or higher class than the original bolts and nuts. It is also important to select replacement fasteners of the correct diameter and thread pitch. Correct replacement bolts and nuts are available as SUZUKI spare parts.

Metric bolts and nuts: Strength class numbers or marks
(The larger the number, the greater the strength).



IE31J1030002-01

1. Nut strength identification

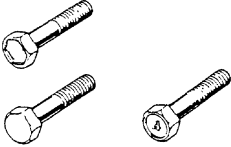

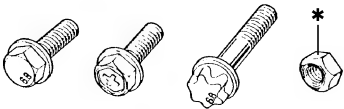

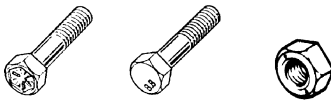
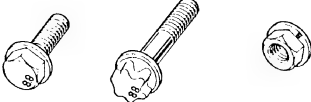
Standard Tightening Torques

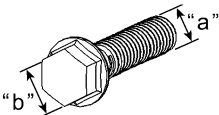
Each fastener should be tightened to the torque specified in each section. If no torque description or specification is provided in the relevant section, refer to the following tightening torque chart for the applicable torque for each fastener. When a fastener of greater strength than the original one is used, use the torque specified for the original fastener.

NOTE

- For flanged bolts, flanged nuts and self-locking nuts of the 4T and 7T strength classes, add 10% to the applicable tightening torques given in the following chart.
- The following chart is applicable only where the fastened parts are made of steel or light alloy.

Tightening torque chart

Strength	Unit	Thread diameter (Nominal diameter) (mm)								
		4	5	6	8	10	12	14	16	18
Fastener of strength class equivalent to 4T  IE31J1030003-01	N·m	1.5	3.0	5.5	13	29	45	65	105	160
	kgf·m	0.15	0.31	0.56	1.3	3.0	4.6	6.6	10.7	16.3
	lbf·ft	1.5	2.5	4.0	9.5	21.5	33.5	48.0	77.5	118.0
Fastener of strength class equivalent to 6.8  IE31J1030004-01	N·m	2.4	4.7	8.4	20	42	80	125	193	280
	kgf·m	0.24	0.48	0.86	2.0	4.3	8.2	12.7	19.7	28.6
	lbf·ft	2.0	3.5	6.5	15.0	31.0	59.0	92.5	142.5	206.5
Flanged fastener of strength class equivalent to 6.8 *: Self-locking nut (6 strength)  IE31J1030005-01	N·m	2.4	4.9	8.8	21	44	84	133	203	298
	kgf·m	0.24	0.50	0.90	2.1	4.5	8.6	13.6	20.7	30.4
	lbf·ft	2.0	4.0	6.5	15.5	32.5	62.0	98.5	150.0	220.0
Fastener of strength class equivalent to 7T  IE31J1030006-01	N·m	2.3	4.5	10	23	50	85	135	210	240
	kgf·m	0.23	0.46	1.0	2.3	5.1	8.7	13.8	21.4	24.5
	lbf·ft	2.0	3.5	7.5	17.0	37.0	63.0	99.5	155.0	177.0
Fastener of strength class equivalent to 8.8 (bolt) or 8 (nut)  IE31J1030007-01	N·m	3.1	6.3	11	27	56	105	168	258	373
	kgf·m	0.32	0.64	1.1	2.8	5.7	10.7	17.1	26.3	38
	lbf·ft	2.5	5.0	8.5	20.0	41.5	77.5	124.0	190.5	275.5
Flanged fastener of strength class equivalent to 8.8 (bolt) or 8 (nut)  IE31J1030008-01	N·m	3.2	6.5	12	29	59	113	175	270	395
	kgf·m	0.33	0.66	1.2	3.0	6.0	11.5	17.8	27.5	40.3
	lbf·ft	2.5	5.0	9.0	21.5	43.5	83.5	129.0	199.5	291.5

Small crown shape bolt  ID26J1030004-01	Width across flats "b" [mm]	Thread diameter "a" [mm]	Unit		
			N·m	kgf·m	lbf·ft
	7	5	4.5	0.46	3.5
	8	6	10	1.0	7.5

*: Self-locking nut

Special Tools and Equipment

Fuel / Oil / Fluid / Coolant Recommendation

BENH23K20308001

Fuel

NOTICE

Do not use leaded gasoline. If it is used, the engine and the emission control system will be damaged.

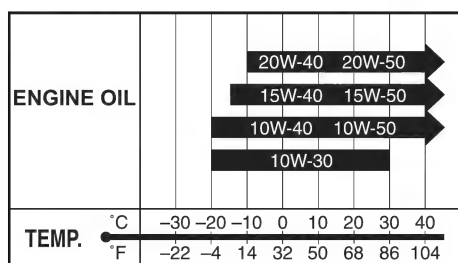
Use unleaded gasoline with an octane rating of 88 RON or higher.

Engine Oil

Use engine oils which meet the following requirements.

	Engine oil
API service classification	SG, SH, SJ or SL
JASO T903 standard	MA
Viscosity	SAE 10W-40

If SAE 10W-40 engine oils are not available, select oils of an appropriate viscosity grade according to the following chart.



IF34J1030001-01

Suzuki does not recommend the use of engine oils which have an "ENERGY CONSERVING" indication in the API service symbol for any of its motorcycles / ATVs. They can affect the engine life and the clutch performance.



IF04K1030002-02

Brake Fluid

Specification and classification: DOT 3 or DOT 4

⚠ WARNING

Since the brake system of this motorcycle is filled with a glycol-based brake fluid by the manufacturer, do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will result.

Do not use any brake fluid taken from old or used or unsealed containers.

Never reuse brake fluid left over from a previous servicing, which has been stored for a long period.

Engine Coolant

Suzuki recommends the use of SUZUKI LONG LIFE COOLANT or SUZUKI SUPER LONG LIFE COOLANT.

Coolant 99000-99032-12X (SUZUKI LONG LIFE COOLANT (GREEN))

Coolant 99000-99032-20X (SUZUKI SUPER LONG LIFE COOLANT (BLUE))

For SUZUKI LONG LIFE COOLANT

NOTICE

- Use a high quality ethylene glycol base anti-freeze, mixed with distilled water. Do not mix an alcohol base anti-freeze and different brands of anti-freeze.
- Do not put in more than 60% anti-freeze or less than 30%. (Refer to Fig. 1 and 2.)

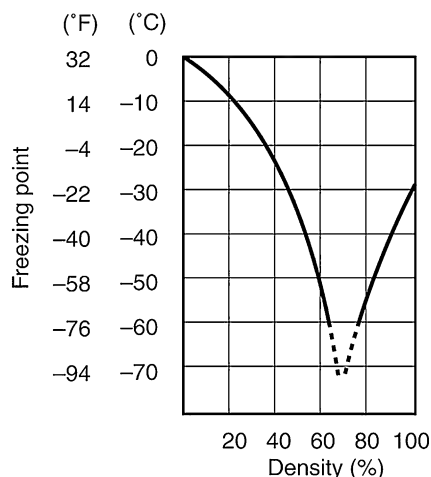
The 70:30 mixture of distilled water and ethylene glycol anti-freeze will provide the optimum corrosion protection and excellent heat protection, and will protect the cooling system from freezing at temperatures above -14.5 °C (5.9 °F).

If the vehicle is to be exposed to temperatures below -14.5 °C (5.9 °F), this mixing ratio should be increased up to 50% according to the figure.

Anti-freeze Proportioning Chart

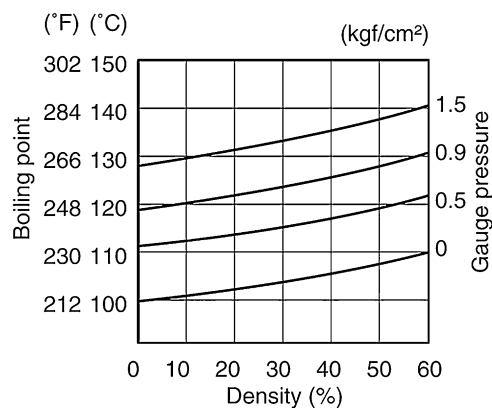
Anti-freeze density	Freezing point
30%	-14.5 °C (5.9 °F)
50%	-34.0 °C (-29.2 °F)

Fig.1: Engine coolant density-freezing point curve



I310G1160001-01

Fig.2: Engine coolant density-boiling point curve



I310G1160002-01

Water for mixing

Use distilled water only. Water other than distilled water can corrode and clog the aluminum radiator. For engine coolant mixture information, refer to "Engine Coolant" (Page 0C-11).

NOTICE

Mixing of anti-freeze/engine coolant should be limited to 60%. Mixing beyond it would reduce its efficiency. If the anti-freeze/engine coolant mixing ratio is below 30%, rust inhabiting performance is greatly reduced. Be sure to mix it above 50% even though the atmospheric temperature does not go down to the freezing point.

For SUZUKI SUPER LONG LIFE COOLANT**NOTICE**

- Ethanol or methanol base coolant or water alone should not be used in cooling system at any time as damage to cooling system could occur.
- Do not mix the distilled water, SUZUKI LONG LIFE COOLANT (coolant color: Green) or equivalent.

SUZUKI SUPER LONG LIFE COOLANT will provide the optimum corrosion protection and excellent heat protection, and will protect the cooling system from freezing at temperatures above -36°C (-33°F).

Anti-freeze concentration table

Anti-freeze density	Freezing point
50%	-36°C (-33°F)

Anti-freeze / Engine coolant

The engine coolant perform as a corrosion and rust inhibitor as well as anti-freeze. Therefore, the engine coolant should be used at all times even though the atmospheric temperature in your area does not go down to freezing point.

Suzuki recommends the use of SUZUKI COOLANT antifreeze/engine coolant. If this is not available, use an equivalent which is compatible with an aluminum radiator.

Front Fork Oil

Use SUZUKI FORK OIL SS-8.

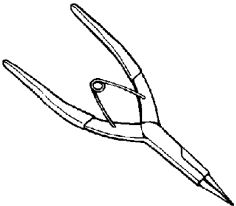
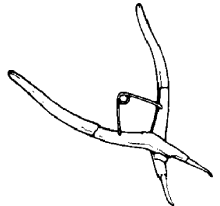
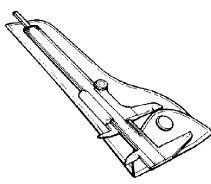
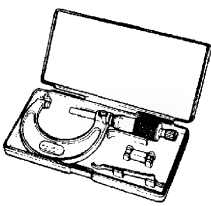
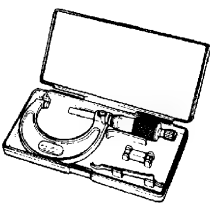
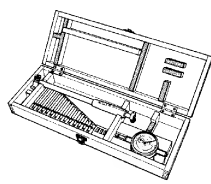
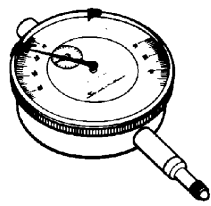
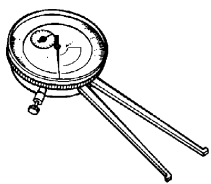
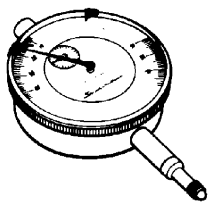
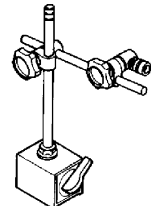
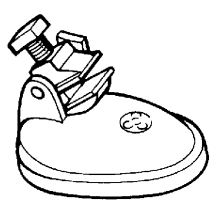
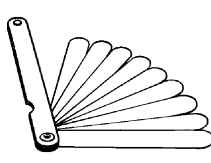
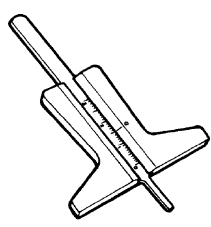
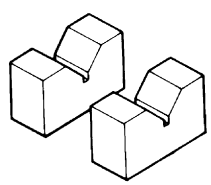
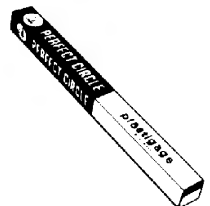
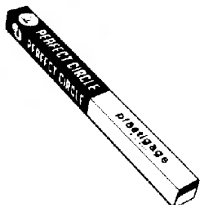
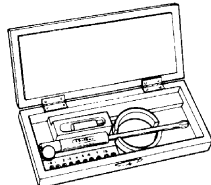
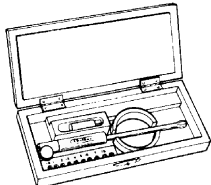
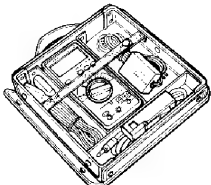
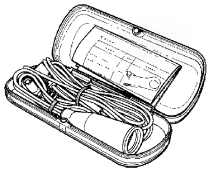
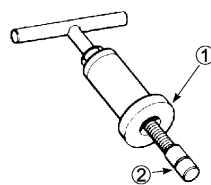
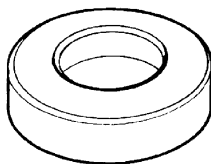
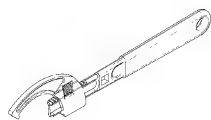
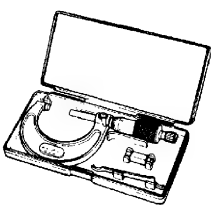
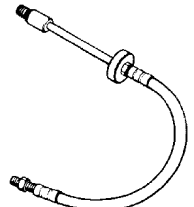
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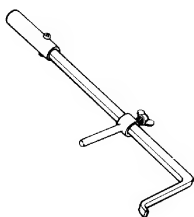
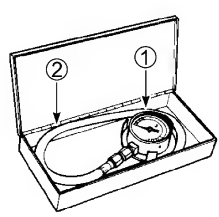
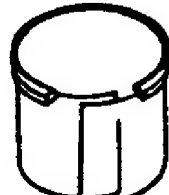
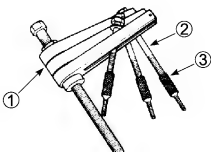
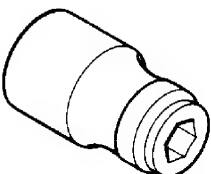
Special Tool

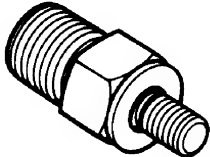
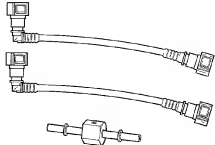
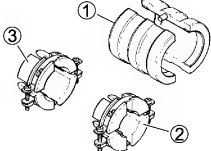
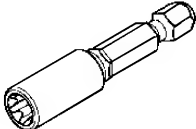

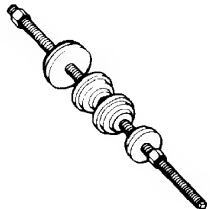

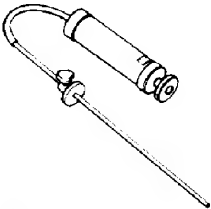
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09900-06107 Snap ring pliers (External)	09900-06108 Snap ring pliers (Internal)	09900-20102 Vernier calipers (200 mm)	09900-20202 Micrometer (25 - 50 mm)	09900-20203 Micrometer (50 - 75 mm)
				
09900-20530 Cylinder gauge set	09900-20602 Dial gauge (1 x 0.001 mm)	09900-20605 Dial calipers (10 - 34 mm)	09900-20607 Dial gauge (10 x 0.01 mm)	09900-20701 Dial gauge chuck
				
09900-20702 Micrometer fixture	09900-20803 Thickness gauge	09900-20805 Tire depth gauge	09900-21304 V blocks	09900-22301 Plastigage (0.025 - 0.076 mm)
				
09900-22302 Plastigage (0.051 - 0.152 mm)	09900-22401 Small bore gauge (10 - 18 mm)	09900-22403 Small bore gauge (18 - 35 mm)	09900-25008 Multi circuit tester set	09900-25009 Needle point probe set
				
09910-32812 Crankshaft installer	09910-32860 Crankshaft installer spacer (20 mm)	09910-60620 Adjustable wrench	09912-66310 Micrometer (0 - 25 mm)	09913-10750 Compression gauge adapter

 <p>09913-50121 Oil seal remover</p>	 <p>09913-65850 Bearing puller</p>	 <p>09913-70210 Bearing installer set</p>	 <p>09915-64512 Compression gauge set (2500 kPa)</p>	 <p>09915-74511 Oil pressure gauge set (600 kPa)</p>
 <p>09916-10911 Valve lapper set</p>	 <p>09916-14510 Valve lifter</p>	 <p>09916-14530 Valve lifter attachment</p>	 <p>09916-84511 Tweezers</p>	 <p>09918-78211 Radiator cap tester kit</p>
 <p>09918-78220 Radiator cap tester adapter</p>	 <p>09919-28610 Sleeve protector</p>	 <p>09920-13120 Crankcase separator</p>	 <p>09920-53740 Clutch sleeve hub holder</p>	 <p>09921-20240 Bearing remover set</p>
 <p>09924-84510 Bearing installer set</p>	 <p>09924-84521 Bearing installer set</p>	 <p>09930-10121 Spark plug socket set</p>	 <p>09930-11940 Torx® bit holder (3/8 sq.)</p>	 <p>09930-34932 Rotor remover</p>
 <p>09930-44521 Rotor holder</p>	 <p>09930-82760 Mode selection switch</p>	 <p>09940-14920 Steering stem nut socket wrench</p>	 <p>09940-34520 T-handle (Long shank: 3/8 sq.)</p>	 <p>09940-34561 Front fork assembling attachment (D)</p>

 09940-40211 Fuel pressure gauge adapter	 09940-40220 Fuel pressure gauge attachment	 09940-52861 Front fork oil seal installer set	 09940-63110 Torx® bit (E8)	 09940-92720 Spring scale (400 - 1000 g)
 09941-34513 Bearing installer set	 09941-74911 Steering stem bearing installer	 09943-74111 Front fork oil level gauge		

Section 1

Engine

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Precautions

Precautions

Precautions for Engine

BENH23K21000001

Refer to "General Precautions" in Section 00 (Page 00-1), "Precautions for Electrical Circuit Service" in Section 00 (Page 00-2) and "Precautions for Circuit Tester" in Section 00 (Page 00-7).

Engine General Information and Diagnosis

Precautions

Precautions for DTC Trouble Shooting

BENH23K21100001

Refer to “General Precautions” in Section 00 (Page 00-1), “Precautions for Electrical Circuit Service” in Section 00 (Page 00-2), and “Precautions for Circuit Tester” in Section 00 (Page 00-7).

NOTE

After repairing the trouble, clear the DTC. (Page 1A-17)

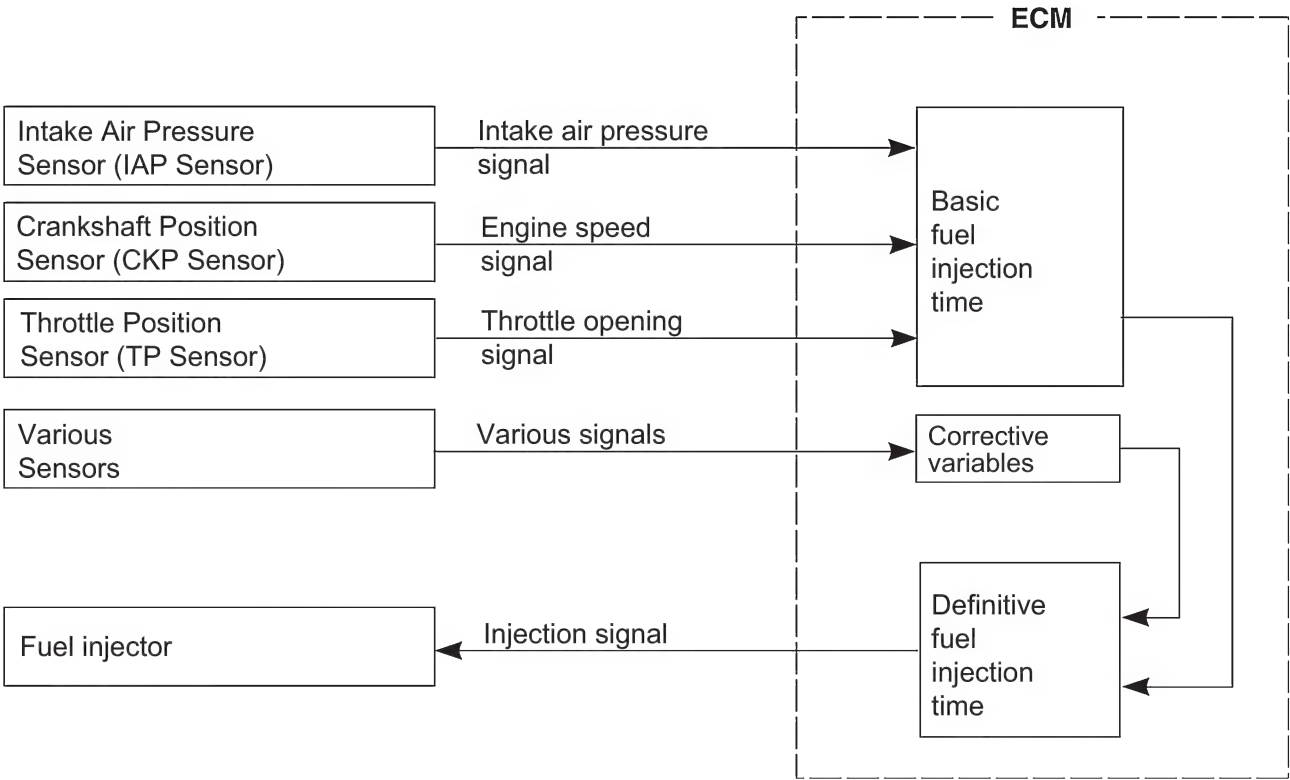
General Description

Injection Timing Description

BENH23K21101001

Injection Time (Injection Volume)

The factors to determine the injection time include the basic fuel injection time, which is calculated on the basis of the intake air pressure, engine speed and throttle opening angle, and various compensations. These compensations are determined according to the signals from various sensors that detect the engine and driving conditions.



IE12J1110001-02

Compensation of Injection Time (Volume)

The following different signals are outputted from the respective sensors for compensation of the fuel injection time (volume).

Signal	Descriptions
ECT sensor signal	When engine coolant temperature is low, injection time (volume) is increased.
O2 sensor signal	Air/fuel ratio is compensated to the theoretical ratio from density of oxygen in exhaust gasses. The compensation occurs in such a way that more fuel is supplied if detected air/fuel ratio is lean and less fuel is supplied if it is rich.
IAT sensor signal	When intake air temperature is low, injection time (volume) is increased.
Engine rpm signal	At high speed, the injection time (volume) is increased.
Starting signal	When starting engine, additional fuel is injected during cranking engine.
Acceleration signal / deceleration signal	During acceleration, the fuel injection time (volume) is increased, in accordance with the throttle opening speed and engine rpm. During deceleration, the fuel injection time (volume) is decreased.

Injection Stop Control

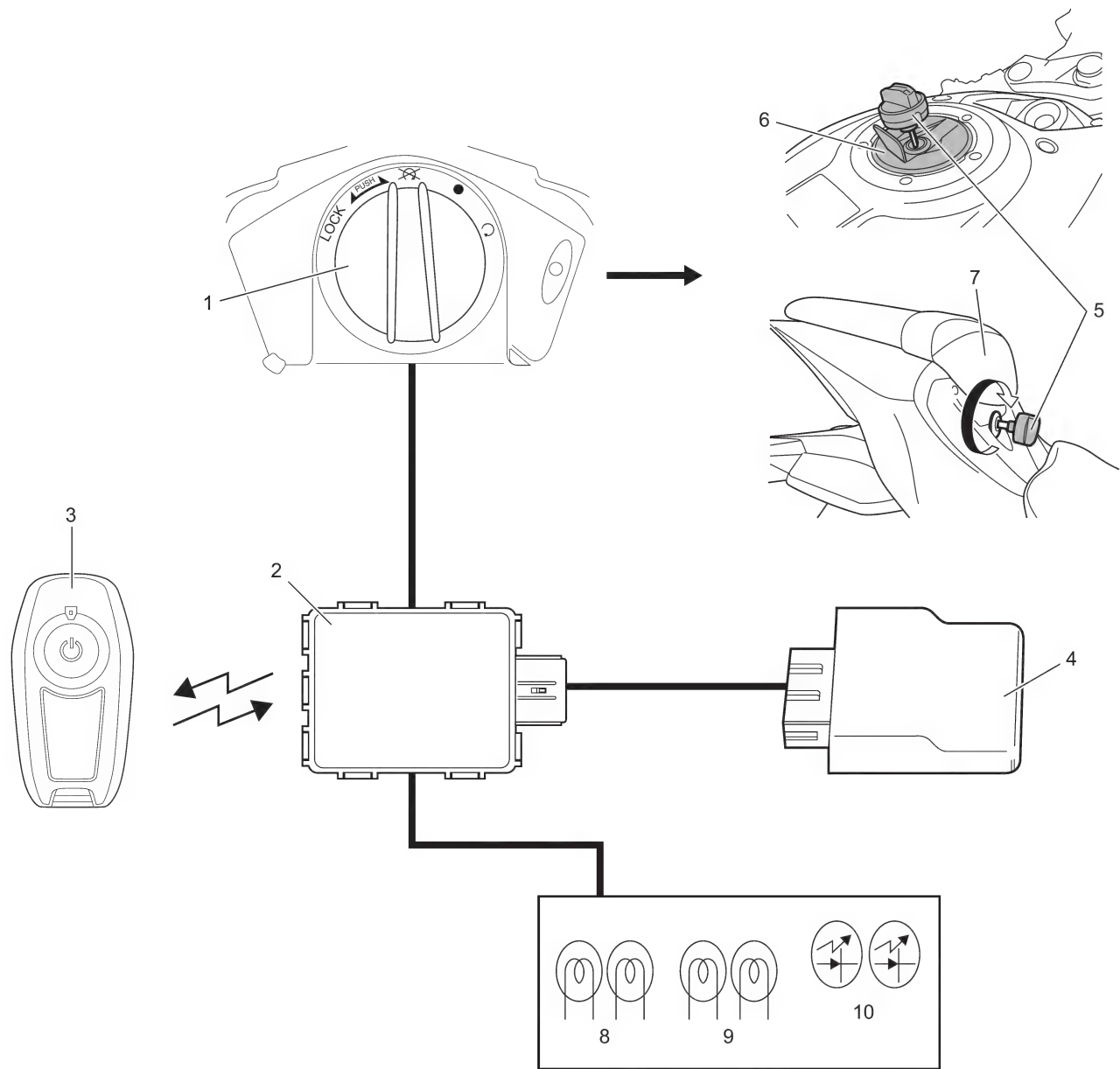
Signal	Descriptions
TO sensor signal	When the motorcycle tips over, the tip-over sensor sends a signal to the ECM. Then, the ECM stops the fuel pump, fuel injector and ignition coil control.
Over-rev. limiter signal	The fuel injector stops operation when engine rpm reaches rev. limit rpm.

Keyless Start System Description

BENH23K21101002

- The keyless start system transmits radio waves between the keyless control unit (2) and the remote controller (3) by means of pushing the request switch built in the ignition switch (1).
- When the multiple IDs held by the keyless control unit (2) are compared with the IDs registered in the remote controller (3) and all the IDs match, the ignition solenoid is unlocked for 4 seconds to enable the ignition switch (1) operation.
- Turning the ignition switch (1) ON, and pushing the start switch starts the engine. (all interlocks for engine start are released)
- After the Ignition switch (1) is turned OFF and then 4 seconds have elapsed, the engine returns to its initial state (before the request switch was pushed).
- When the remote controller (3) cannot be used due to missing or battery run down, input secret code using the request switch and the engine can be started.
- Setting the ignition switch (1) to the LOCK position with the handlebars turned fully to left, locks the handlebars.
- Up to 6 remote controller (3) can be added. When 6 remote controllers (3) have been added, no further remote controller (3) can be registered. If new remote controller wants to be added, the keyless control unit (2) and the ECM (4) must be replaced at the same time.
- Setting the ignition switch (1) to the “•” (ACC) position enables the ignition key (5) removal and installation. Using the removed ignition key (5) enables the operating the fuel cap (6) and removal of the rear seat (7).
- The remote control features the communication mode for communicating with the motorcycle, and the stop mode for preventing erroneous operations.

1A-3 Engine General Information and Diagnosis:



IH23K1110018-05

1. Ignition switch / Request switch	5. Ignition key	9. Right turn signal light
2. Keyless control unit	6. Fuel lid	10. LED (Turn signal indicator light)
3. Remote controller	7. Rear seat	
4. ECM	8. Left turn signal light	

Self-Diagnosis Function

BENH23K21101003

The self-diagnosis function is incorporated in the ECM. The function has two modes, "User mode" and "Dealer mode". The user can only be notified by the LCD (DISPLAY) panel and LED (MIL). To check the function of the individual FI system devices, the dealer mode is provided. In this check, the special tool is necessary to read the DTC.

User Mode

Malfunction		LCD (display) indication (1)	MIL indication (2)	Indication mode
"NO"		Odometer *1	—	—
"YES"	Engine can start	Odometer (*1) and "FI" letters (*2)	MIL turns ON.	Each 2 sec. Odometer (*1) and "FI" is indicated alternately.
	Engine cannot start	"FI" letters (*3)	MIL turns ON and then blinks.	"FI" is indicated continuously.

*1

Current letter display refer to any one of the following: odometer, tripmeter A or tripmeter B.

*2

When one of the signals does not reach the ECM, the fail-safe circuit is activated and fuel injection continues. In this case, "FI" and odometer (*1) are indicated in the LCD panel and motorcycle is in running condition.

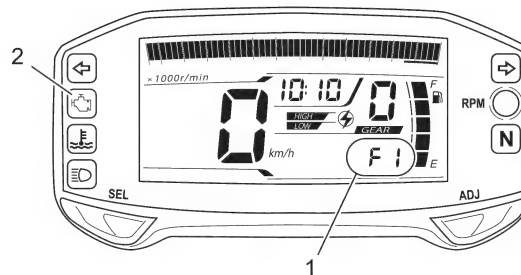
*3

The injection signal is stopped, when the CKP sensor signal, TO sensor signal, ignition signal, injector signal, or ignition switch signal is not sent to ECM.

In this case, "FI" is indicated in the LCD panel. Motorcycle is not in running condition.

NOTE

The MIL turns ON about 3 seconds after turning the ignition switch ON.



IG12K1110001-01

1A-5 Engine General Information and Diagnosis:

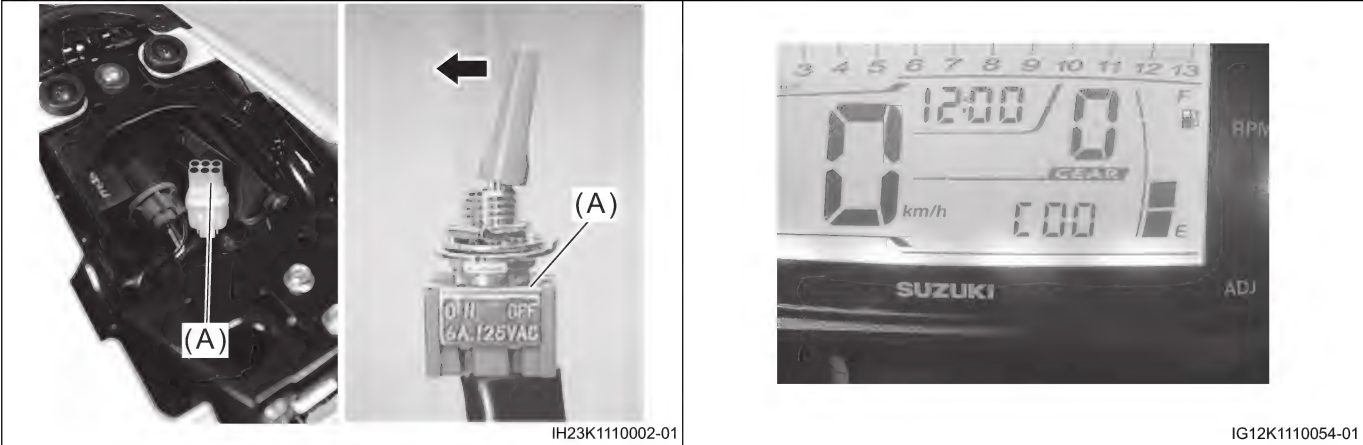
Dealer Mode

The defective function is memorized in the ECM. Use the special tool's coupler to connect to the mode select coupler (2P).

The memorized malfunction code is displayed on LCD panel. Malfunction means that the ECM does not receive normal signals from the devices. These affected devices are indicated in code form.

Special tool

(A): 09930-82760



Malfunction	LCD (display) indication	MIL indication	Indication mode
"NO"	C00	MIL turns OFF.	—
"YES"	C** code is indicated from small to large numbers.		For each 2 sec., code is indicated.

DTC Storage

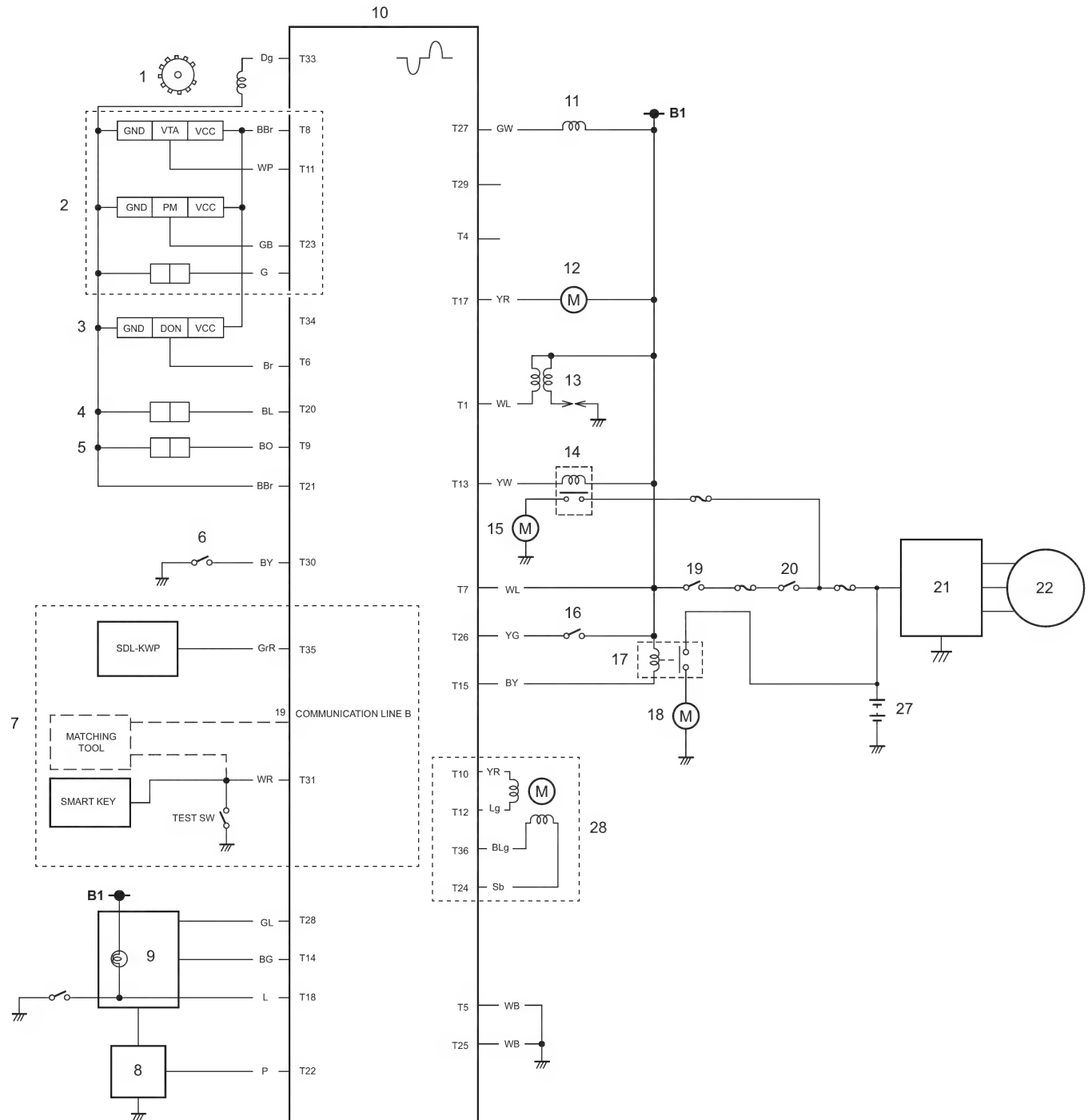
Two (current and past) DTCs, can be memorized in the ECM.

- Current DTC is cleared when the ignition switch is turned OFF, then it is memorized in ECM as a Past DTC.
- Past DTCs are not cleared even when the ignition switch has been turned OFF or the trouble has been repaired.

Schematic and Routing Diagram

FI System Wiring Diagram

BENH23K21102001

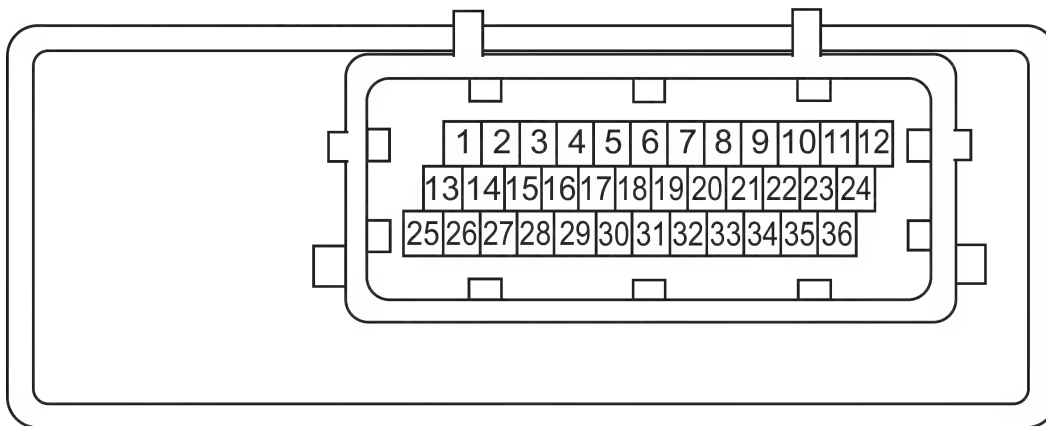


IH23K1110001-04

1. CKP sensor	8. Speed sensor	15. Cooling fan motor	22. Generator
2. IAP/TP/IAT sensor	9. Combination meter	16. Starter switch	23. Fan fuse (10 A)
3. TO sensor	10. ECM	17. Starter relay	24. Main fuse (20 A)
4. ECT sensor	11. Fuel injector	18. Starter motor	25. Sub fuse (10 A)
5. O2 sensor	12. Fuel pump	19. Kill switch	26. Spark plug
6. Clutch switch	13. Ignition coil	20. Ignition switch	27. Battery
7. Keyless start system (if equipped)	14. Cooling fan relay	21. Regulator/rectifier	28. ISC Sensor

1A-7 Engine General Information and Diagnosis:

Terminal Arrangement of ECM Connector “T”

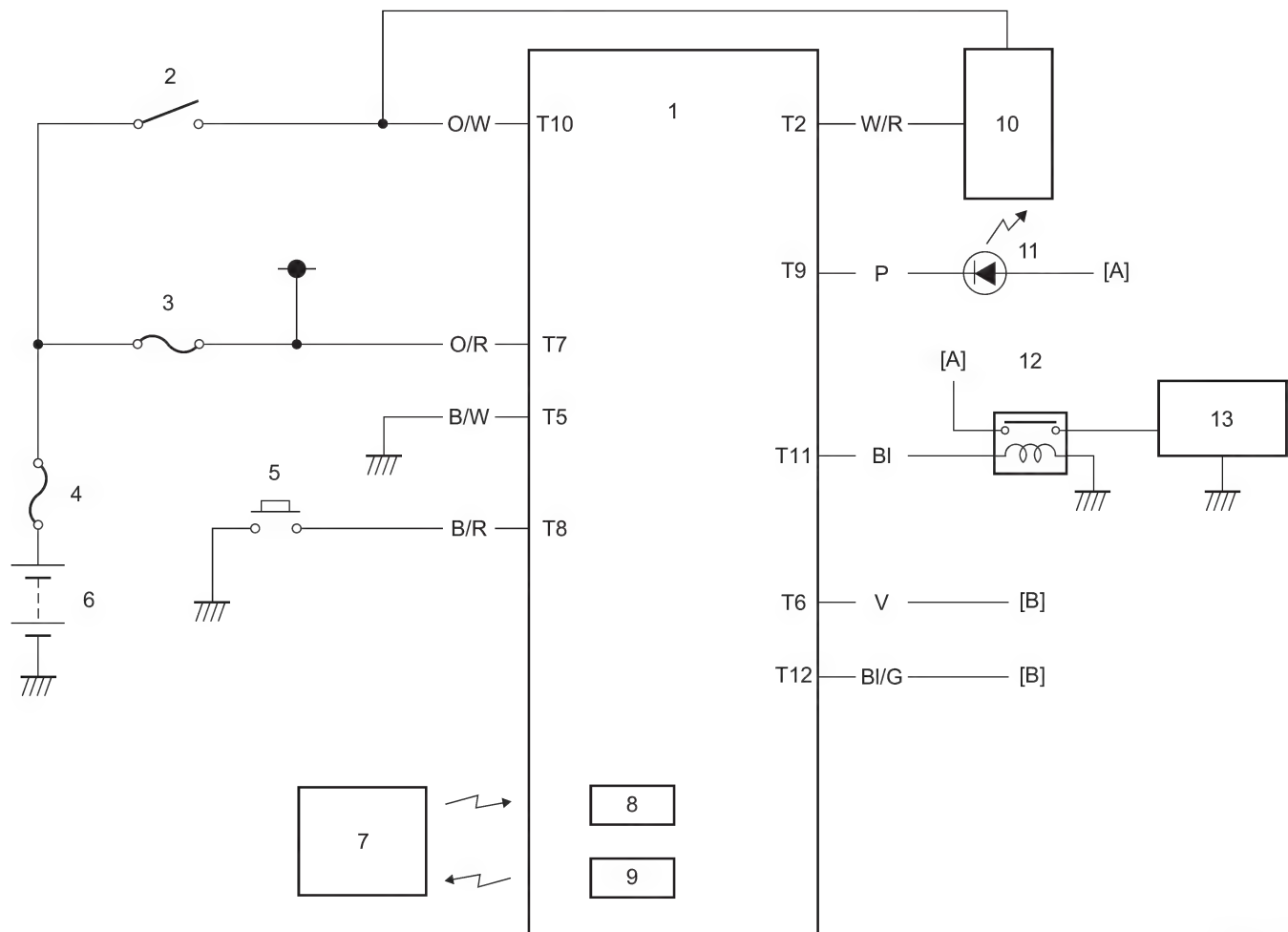


IH23K1110016-01

Terminal No.	Circuit	Terminal No.	Circuit
T1	Ignition coil	T19	Communication line B
T2	—	T20	Intake air temperature sensor
T3	—	T21	Sensor ground
T4	2nd air solenoid	T22	Speed sensor
T5	Control circuit ground	T23	Manifold pressure sensor
T6	Water temperature sensor	T24	ISC actuator 2B
T7	Battery	T25	Power source ground
T8	Sensor power	T26	Starter switch
T9	O2 sensor	T27	Injector
T10	ISC actuator 1A	T28	Meter Communication
T11	Throttle position sensor	T29	Canister purge solenoid
T12	ISC actuator 1B	T30	Clutch switch
T13	Radiator fan relay	T31	Test sw/communication line A/smart key
T14	Tachometer	T32	—
T15	Starter relay	T33	Crankshaft position sensor
T16	—	T34	Fuel cut sensor
T17	Fuel pump	T35	SDL - KWP
T18	Neutral switch	T36	ISC actuator 2A

Keyless Start System Wiring Diagram

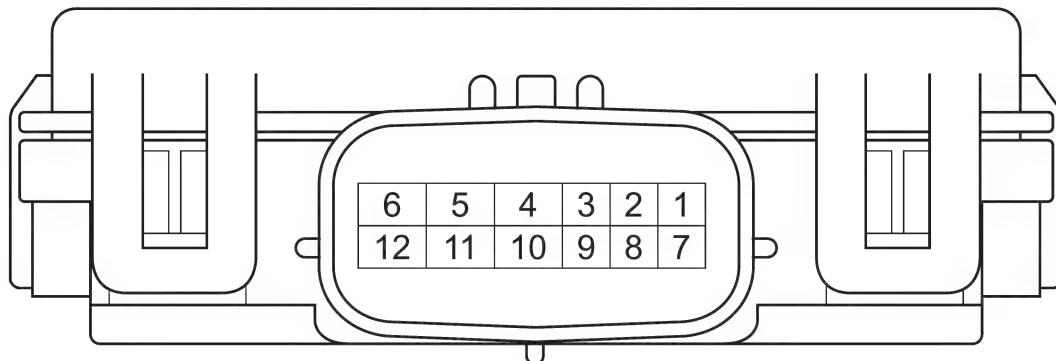
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IH23K1110019-02

[A]: From Terminal 7	3. Sub fuse (10 A)	7. Remote controller	11. Keyless indicator light
[B]: To turn signal light	4. Main fuse (10 A)	8. Receiver	12. Ignition relay
1. Keyless control unit	5. Request switch	9. Antenna	13. Ignition solenoid
2. Ignition switch	6. Battery	10. ECM	

Terminal Arrangement of Keyless Control Unit Connector "T"



IH23K1110020-01

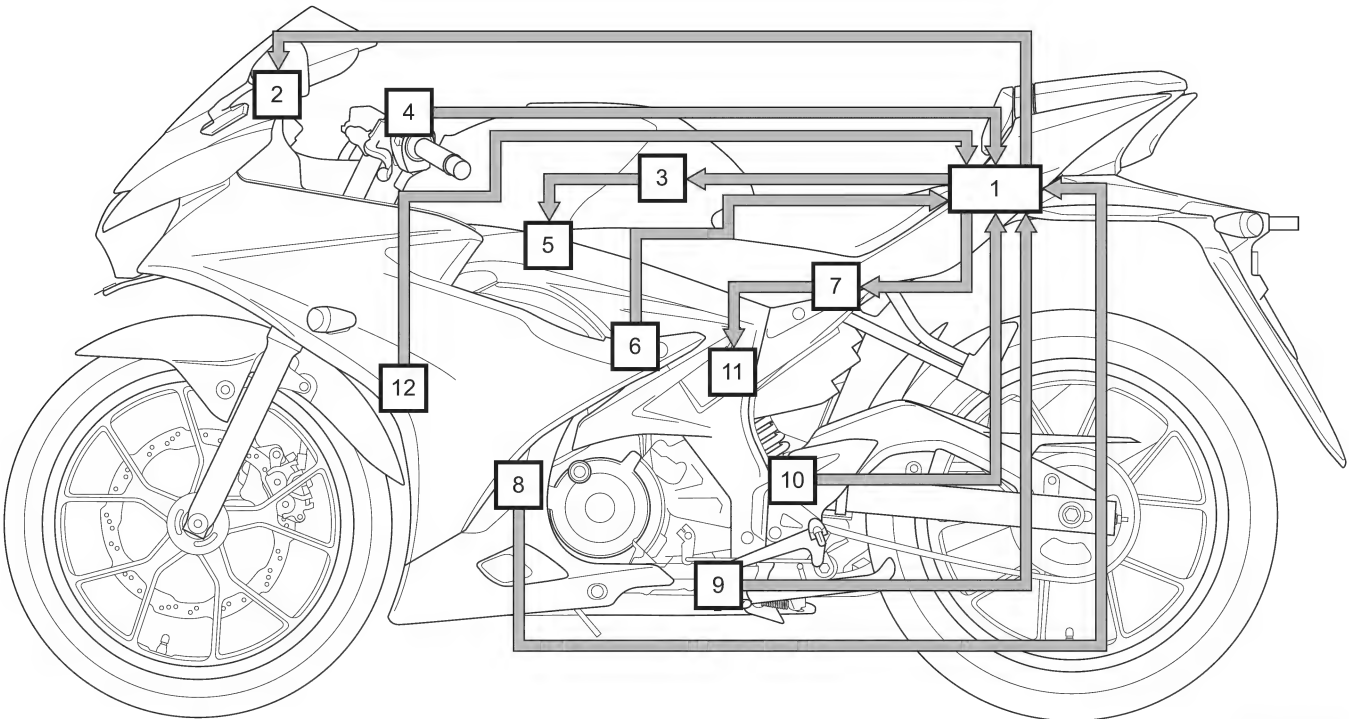
Terminal No.	Circuit	Terminal No.	Circuit
T1	—	T7	Power source (+B)
T2	Communication line	T8	Request switch
T3	—	T9	Keyless indicator
T4	—	T10	Main switch monitor
T5	Ground	T11	Ignition solenoid
T6	Left answer back output	T12	Right answer back output

Component Location

FI System Component Location

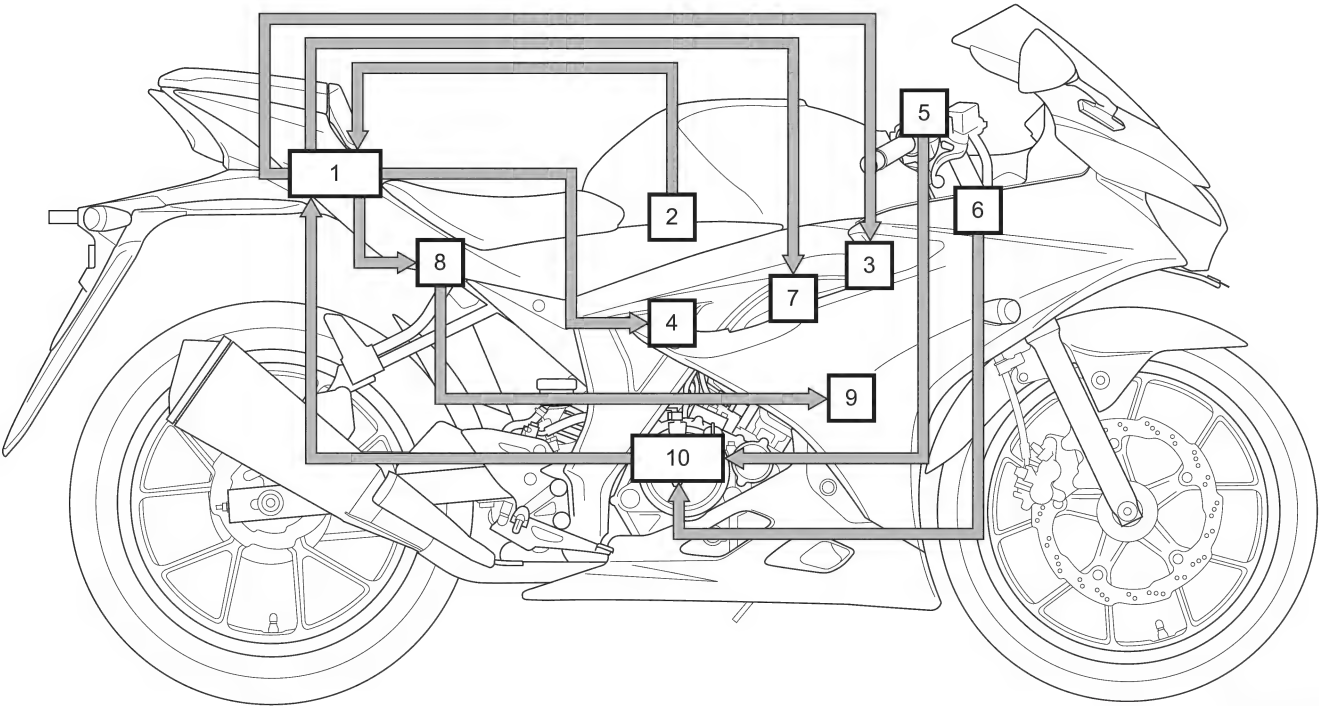
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GSX R 150 Model



IH23K1110022-01

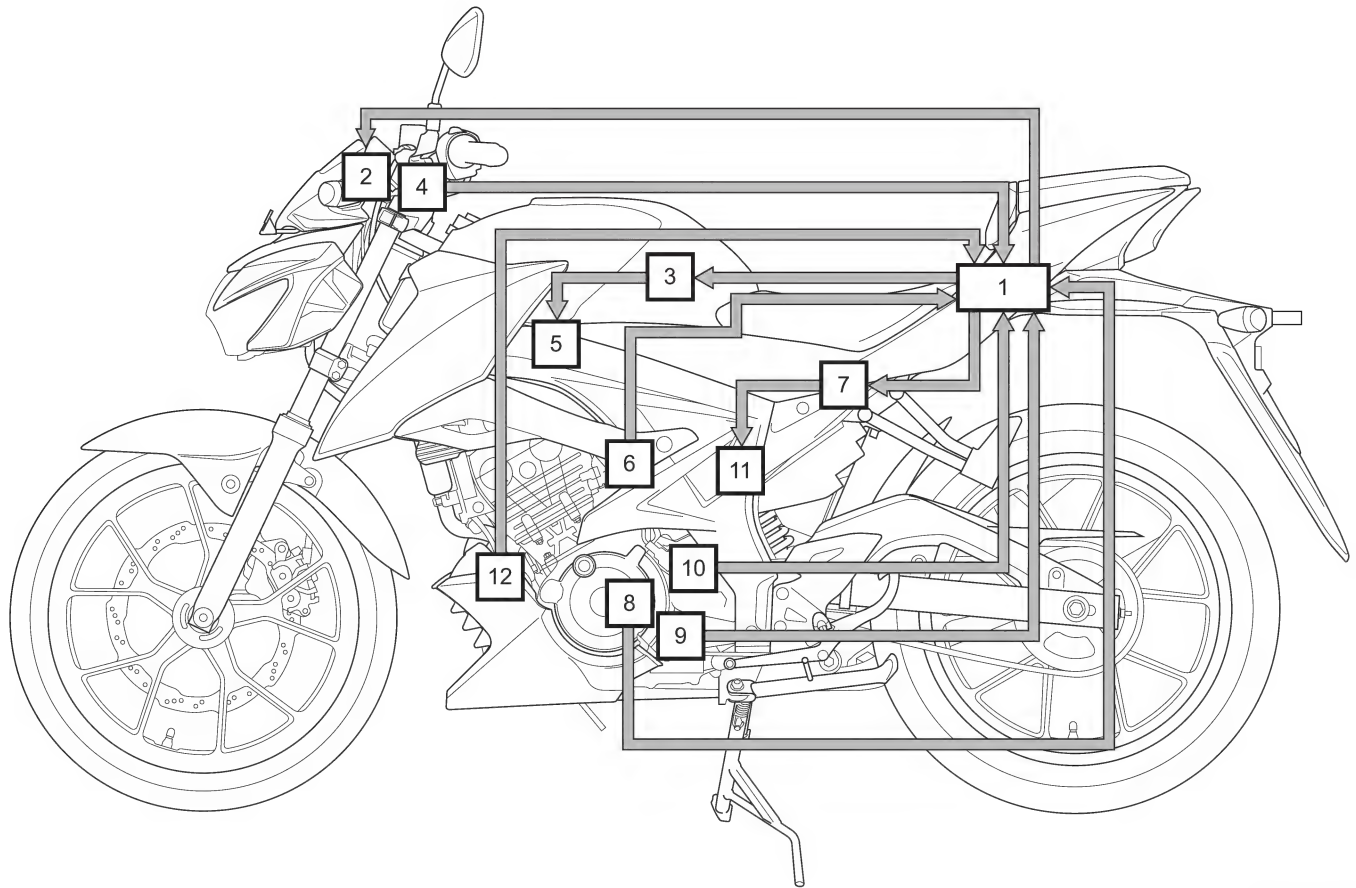
1. ECM	5. Fuel pump	9. GP sensor
2. Combination meter	6. ECT sensor	10. Speed sensor
3. FP relay	7. Starter relay	11. Starter motor
4. Clutch lever position switch	8. CKP sensor	12. O2 sensor



IH23K1110021-03

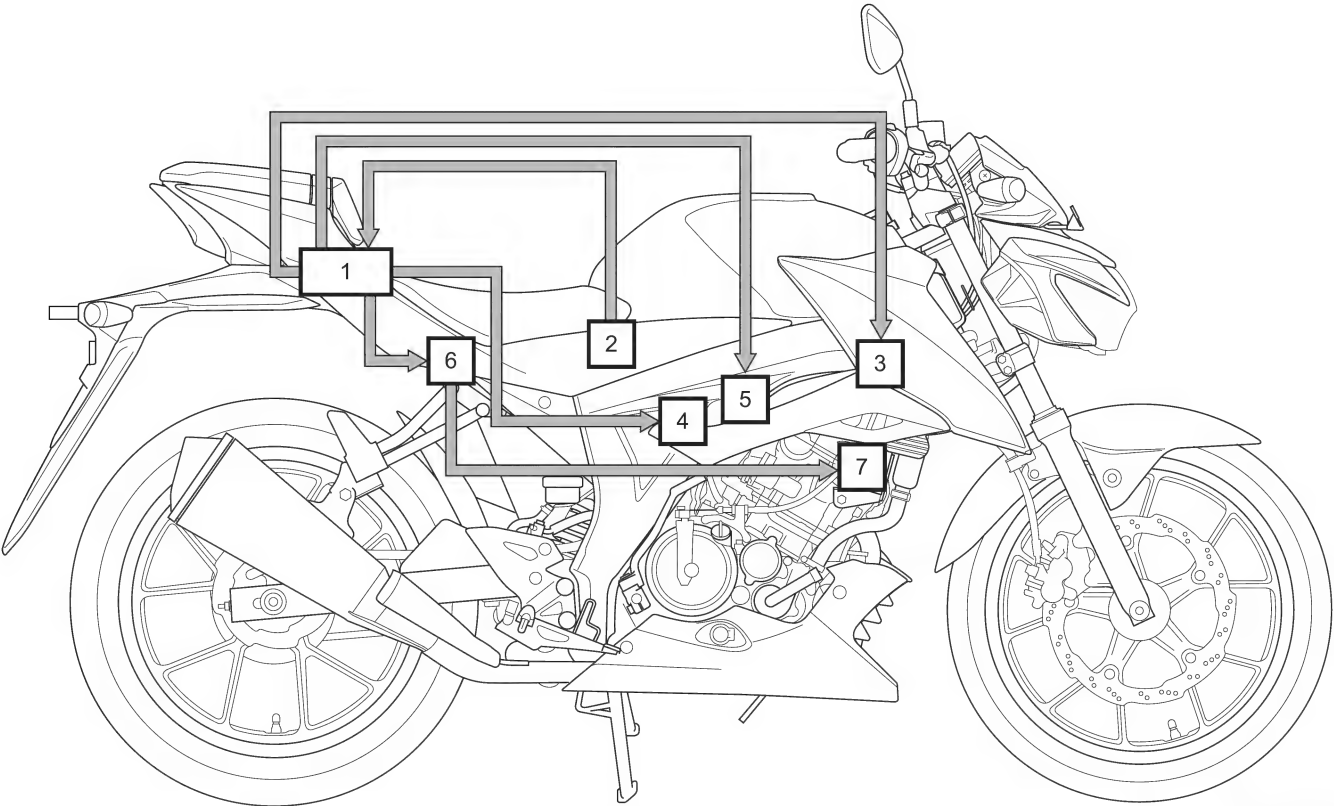
1. ECM	5. Ignition solenoid	9. Cooling fan
2. TO sensor	6. Ignition relay	10. Keyless control unit
3. Ignition coil	7. Fuel injector	
4. IAP/TP/IAT sensor	8. Cooling fan relay	

GSX S 150 Model



IH23K2110001-01

1. ECM	5. Fuel pump	9. GP sensor
2. Combination meter	6. ECT sensor	10. Speed sensor
3. FP relay	7. Starter relay	11. Starter motor
4. Clutch lever position switch	8. CKP sensor	12. O2 sensor



IH23K2110002-01

1. ECM	4. IAP/TP/IAT sensor	7. Cooling fan
2. TO sensor	5. Fuel injector	
3. Ignition coil	6. Cooling fan relay	

Diagnostic Information and Procedures

Engine Symptom Diagnosis

BENH23K21104001

Condition	Possible cause	Correction / Reference Item
Engine will not start or is hard to start (Compression too low)	Valve clearance out of adjustment.	Adjust. (Page 1D-24)
	Worn valve guides or poor seating of valves.	Repair or replace. (Page 1D-32)
	Mistimed valves.	Adjust. (Page 1D-24)
	Excessively worn piston rings.	Replace. (Page 1D-39)
	Worn-down cylinder bore.	Replace. (Page 1D-28)
	Too slow starter motor cranking.	Repair or replace. • Repair: (Page 1I-7) • Replace: (Page 1I-5)
	Poor seating of spark plug.	Retighten. (Page 1H-5)
Engine will not start or is hard to start (Plug not sparking)	Defective spark plug.	Replace. (Page 1H-5)
	Too wide spark plug gap.	Adjust or replace. (Page 1H-6)
	Fouled spark plug.	Clean or replace. (Page 1H-6)
	Wet spark plug.	Dry or replace. (Page 1H-6)
	Defective spark plug cap.	Replace. (Page 1H-6)
	Defective ignition coil.	Replace. (Page 1H-6)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ECM.	Replace. (Page 1C-2)
	Open-circuited wiring connections.	Repair or replace. (Page 9A-2)
Engine will not start or is hard to start (No fuel reaching the intake port)	Open or short in high-tension cord.	Replace. (Page 1H-6)
	Clogged fuel filter or fuel hose.	Clean or replace. • Fuel filter: (Page 1G-14) • Fuel hose: (Page 1G-5)
	Defective fuel pump.	Replace. (Page 1G-11)
	Defective fuel pressure regulator.	Replace. (Page 1G-11)
	Defective fuel injector.	Replace. (Page 1G-15)
	Defective ECM.	Replace. (Page 1C-2)
	Open-circuited wiring connections.	Repair and replace. (Page 9A-2)
Engine will not start or is hard to start (Incorrect fuel/air mixture)	Defective fuel pump.	Replace. (Page 1G-11)
	Defective fuel pressure regulator.	Replace. (Page 1G-11)
	Defective TP sensor.	Replace. (Page 1D-13)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective IAP sensor.	Replace. (Page 1D-13)
	Defective ECM.	Replace. (Page 1C-2)
	Defective ECT sensor.	Replace. (Page 1C-7)
	Defective IAT sensor.	Replace. (Page 1D-13)
	Clogged ISC valve air passage way	Repair or replace. (Page 1D-13)

1A-13 Engine General Information and Diagnosis:

Condition	Possible cause	Correction / Reference Item
Engine idles poorly	Valve clearance out of adjustment.	Adjust. (Page 1D-24)
	Poor seating of valves.	Repair. (Page 1D-37)
	Defective valve guides.	Replace. (Page 1D-32)
	Worn down camshafts and/or camshafts surface.	Replace. • Removal: (Page 1D-17) • Installation: (Page 1D-18)
	Too wide spark plug gap.	Adjust or replace. (Page 1H-6)
	Defective ignition coil.	Replace. (Page 1H-6)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ECM.	Replace. (Page 1C-2)
	Defective TP sensor.	Replace. (Page 1D-13)
	Defective fuel pump.	Replace. (Page 1G-11)
	Dirty throttle body.	Clean. (Page 1D-15)
Engine stalls often (Incorrect fuel/air mixture)	Defective IAP sensor or circuit.	Repair or replace. (Page 1D-13)
	Clogged fuel filter.	Clean or replace. (Page 1G-14)
	Defective fuel pump.	Replace. (Page 1G-11)
	Defective fuel pressure regulator.	Replace. (Page 1G-11)
	Defective ECT sensor.	Replace. (Page 1C-7)
	Defective thermostat.	Replace. (Page 1F-12)
	Defective IAT sensor.	Replace. (Page 1D-13)
Engine stalls often (Fuel injector improperly operating)	ISC valve clogged or defective.	Clean or Replace. (Page 1C-5)
	Defective fuel injector.	Replace. (Page 1G-15)
	No injection signal from ECM.	Repair or replace. (Page 1A-34)
	Open or short circuited wiring connections.	Repair or replace. (Page 9A-2)
Engine stalls often (Control circuit or sensor improperly operating)	Defective battery or low battery voltage.	Replace or recharge. (Page 1J-10)
	Defective ECM.	Replace. (Page 1C-2)
	Defective fuel pressure regulator.	Replace. (Page 1G-11)
	Defective TP sensor.	Replace. (Page 1D-13)
	Defective IAT sensor.	Replace. (Page 1D-13)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ECT sensor.	Replace. (Page 1C-7)
	Defective ISC valve.	Replace. (Page 1C-5)
Engine stalls often (Engine internal parts improperly operating)	Fouled spark plug.	Clean or replace. (Page 1H-6)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ECM.	Replace. (Page 1C-2)
	Clogged fuel hose.	Clean or replace. (Page 1G-5)
	Valve clearance out of adjustment.	Adjust. (Page 1D-24)
	Dirty throttle body.	Clean. (Page 1D-15)
Noisy engine (Excessive valve chatter)	Too large valve clearance.	Adjust. (Page 1D-24)
	Weakened or broken valve springs.	Replace. (Page 1D-33)
	Worn tappet or camshafts surface.	Replace. • Removal: (Page 1D-17) • Installation: (Page 1D-18)
	Worn or burnt camshaft journals.	Replace. (Page 1D-32)

Condition	Possible cause	Correction / Reference Item
Noisy engine (Noise seems to come from piston)	Worn down piston or cylinder.	Replace. • Piston: (Page 1D-38) • Cylinder: (Page 1D-28)
	Combustion chamber fouled with carbon.	Clean. (Page 1D-33)
	Worn piston pin or piston pin bore.	Replace. (Page 1D-38)
	Worn piston rings or ring grooves.	Replace. (Page 1D-39)
Noisy engine (Noise seems to come from cam chain)	Stretched cam chain.	Replace. (Page 1D-42)
	Worn sprockets.	Replace. • Removal: (Page 1D-17) • Installation: (Page 1D-18)
	Cam chain tension adjuster not working.	Repair or replace. (Page 1D-31)
Noisy engine (Noise seems to come from crankshaft)	Rattling bearing due to wear.	Replace. (Page 1D-53)
	Worn or burnt big-end bearing.	Replace. • Disassembly: (Page 1D-47) • Reassembly: (Page 1D-49)
	Worn or burnt crankcase bearings.	Replace. (Page 1D-53)
Noisy engine (Noise seems to come from balancer)	Worn or burnt balancer shaft bearings.	Replace. (Page 1D-53)
Noisy engine (Noise seems to come from water pump)	Too much play on pump shaft bearings.	Replace. (Page 1F-14)
	Worn or damaged impeller shaft.	Replace. (Page 1F-14)
	Worn or damaged oil seal.	Replace. (Page 1F-14)
	Contact between pump case and impeller.	Replace. (Page 1F-14)
Engine runs poorly in high speed range (Defective engine internal/electrical parts)	Weakened valve springs.	Replace. (Page 1D-33)
	Worn camshaft.	Replace. • Removal: (Page 1D-17) • Installation: (Page 1D-18)
	Valve timing out of adjustment.	Adjust. (Page 1D-24)
	Too narrow spark plug gap.	Adjust. (Page 1H-6)
	Ignition not advanced sufficiently due to poorly working timing advance circuit.	Replace ECM. (Page 1C-2)
	Defective ignition coil.	Replace. (Page 1H-6)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ECM.	Replace. (Page 1C-2)
	Clogged air cleaner element.	Replace. (Page 1D-9)
	Clogged fuel hose, resulting in inadequate fuel supply to injector.	Clean and prime.
	Defective fuel pump.	Replace. (Page 1G-11)
	Defective TP sensor.	Replace. (Page 1D-13)
Engine runs poorly in high speed range (Defective air flow system)	Clogged air cleaner element.	Replace. (Page 1D-9)
	Sucking air from throttle body joint or intake pipe joint.	Retighten or replace.
	Defective ECM.	Replace. (Page 1C-2)
	Defective throttle valve.	Replace. (Page 1D-13)
Engine runs poorly in high speed range (Defective control circuit or sensor)	Low fuel pressure.	Repair or replace.
	Defective TP sensor.	Replace. (Page 1D-13)
	Defective IAT sensor.	Replace. (Page 1D-13)
	Defective IAP sensor.	Replace. (Page 1D-13)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ECM.	Replace. (Page 1C-2)

1A-15 Engine General Information and Diagnosis:

Condition	Possible cause	Correction / Reference Item
Engine lacks power (Defective engine internal/ electrical parts)	Loss of valve clearance.	Adjust. (Page 1D-24)
	Weakened valve springs.	Replace. (Page 1D-33)
	Valve timing out of adjustment.	Adjust. (Page 1D-24)
	Worn piston rings or cylinder.	Replace. (Page 1D-39)
	Poor seating of valves.	Repair. (Page 1D-37)
	Fouled spark plug.	Clean or replace. (Page 1H-6)
	Incorrect spark plug.	Replace. (Page 1H-5)
	Clogged fuel injector.	Clean or replace. (Page 1G-16)
	Clogged air cleaner element.	Replace. (Page 1D-9)
	Sucking air from throttle body joint or intake pipe joint.	Retighten or replace.
	Too much engine oil.	Drain out excess oil.
	Defective fuel pump.	Replace. (Page 1G-11)
	Defective ECM.	Replace. (Page 1C-2)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ignition coil.	Replace. (Page 1H-6)
Engine lacks power (Defective control circuit or sensor)	Low fuel pressure.	Repair or replace.
	Defective TP sensor.	Replace. (Page 1D-13)
	Defective IAT sensor.	Replace. (Page 1D-13)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective IAP sensor.	Replace. (Page 1D-13)
	Defective ECM.	Replace. (Page 1C-2)
Engine overheats (Defective engine internal parts)	Heavy carbon deposit on piston crown.	Clean.
	Not enough oil in the engine.	Add oil. (Page 1E-5)
	Defective oil pump or clogged oil circuit.	Replace or clean. (Page 1E-8)
	Use of incorrect engine oil.	Replace. (Page 1E-5)
	Sucking air from throttle body joint or intake pipe joint.	Retighten or replace.
	Defective cooling system.	Refer to "Engine Cooling Symptom Diagnosis" in Section 1F (Page 1F-4).
Engine overheats (Lean fuel/air mixture)	Short-circuited IAP sensor/lead wire.	Repair or replace. (Page 1D-13)
	Short-circuited IAT sensor/lead wire.	Repair or replace. (Page 1D-13)
	Sucking air from throttle body joint or intake pipe joint.	Retighten or replace.
	Defective fuel injector.	Replace. (Page 1G-16)
	Defective ECT sensor.	Replace. (Page 1C-7)
Engine overheats (Other factors)	Ignition timing is too advanced due to defective timing advance system (ECT sensor, CKP sensor or ECM).	Replace.
Dirty or heavy exhaust smoke	Too much engine oil.	Drain out excess oil.
	Worn piston rings or cylinder.	Replace. (Page 1D-39)
	Worn valve guides.	Replace. (Page 1D-32)
	Scored or scuffed cylinder wall.	Replace. (Page 1D-28)
	Worn valve stems.	Replace. (Page 1D-33)
	Defective valve stem oil seal.	Replace. (Page 1D-33)
	Worn oil ring side rails.	Replace. (Page 1D-39)

DTC Check

BENH23K21104002

NOTE

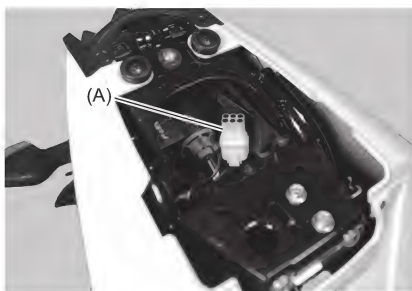
Before checking DTC, read "User mode and Dealer mode" under "Self-Diagnosis Function" (Page 1A-4) carefully to have good understanding as to what functions are available and how to use it.

Current DTC**NOTE**

Current DTC is erased when the ignition switch is turned OFF.

- 1) Open the rear seat.
- 2) Connect the special tool to the mode select coupler (2P) at the wiring harness.

Special tool
(A): 09930-82760



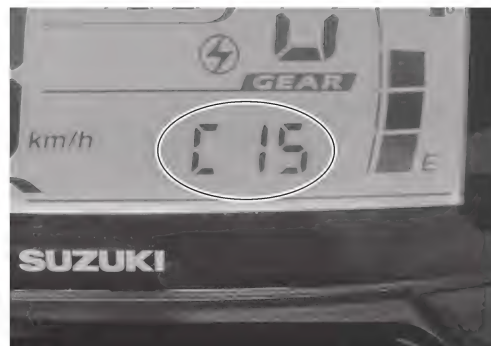
IH23K1110006-02

- 3) Start the engine or crank the engine for more than 4 seconds.
- 4) Turn the special tool's switch ON.



ID26J1110213-01

- 5) Check the DTC to determine the malfunction part.
(Page 1A-18)



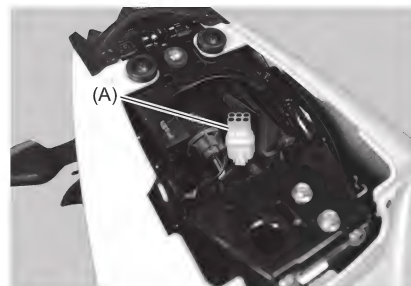
IG12K1110009-01

Past DTC**NOTE**

Past DTC is not indicated if there is malfunction in TP sensor.

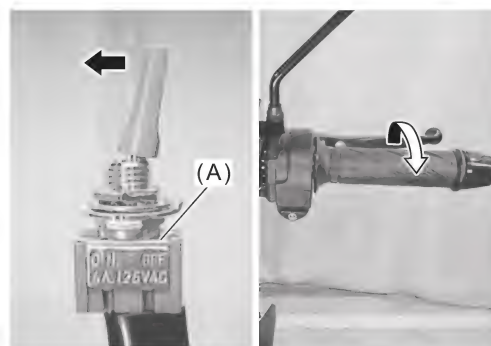
- 1) Open the rear seat.
- 2) Connect the special tool to the mode select coupler (2P) at the wiring harness.

Special tool
(A): 09930-82760



IH23K1110006-02

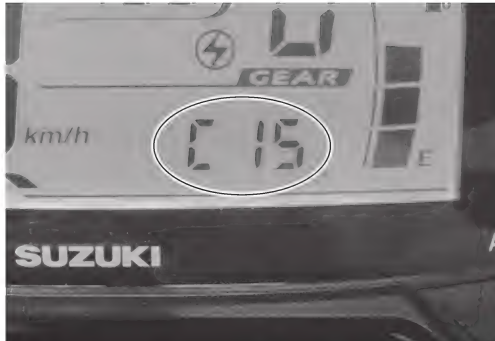
- 3) Open the throttle grip fully within 3 seconds after turning ON the special tool's switch and hold the throttle grip opened.



IG12K1110010-01

1A-17 Engine General Information and Diagnosis:

- 4) In the state of Step 3), turn the ignition switch ON and hold the throttle grip as it is for more than 1 second.
- 5) Check the DTC to determine the malfunction part.
(Page 1A-18)



IG12K1110009-01

DTC Clearance

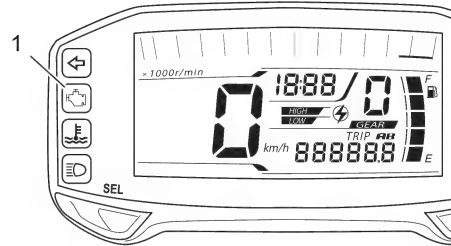
BENH23K21104003

NOTE

DTC is memorized in the ECM also when the lead wire coupler of any sensor is disconnected. Therefore, when a lead wire coupler has been disconnected in the diagnosis, erase the stored Past DTC.

Current DTC

- 1) After repairing the trouble, turn OFF the ignition switch and turn ON again.
- 2) If the MIL (1) turns OFF, the malfunction is cleared.



IG12K1110011-01

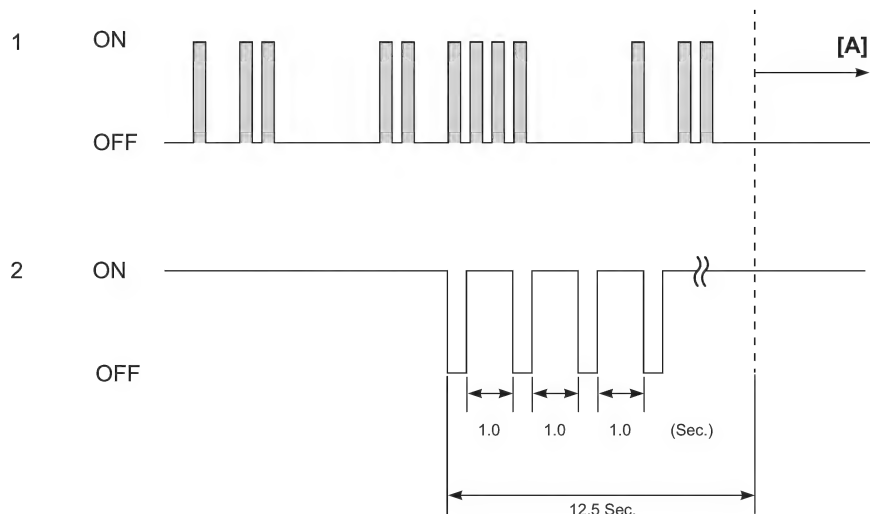
- 3) Disconnect the special tool from the mode select coupler and install the removed parts.

NOTE

Even though the Current DTC is cleared, Past DTC (previous malfunction history code) still remains stored in the ECM. Therefore, erase the Past DTC memorized in the ECM.

Past DTC

- 1) Display Past DTC. Refer to "Past DTC" under "DTC Check" (Page 1A-16).
- 2) Turn the special tool's switch OFF then ON again for more than 1 second. Repeat this operation 3 or more times during 12.5 seconds.
When the MIL turns OFF, the Past DTC is cleared.



IG12K1110012-02

[A]: DTC cleared	1. MIL	2. Special tool
------------------	--------	-----------------

- 3) Disconnect the special tool from the mode select coupler (2P) and close the seat.

DTC Table

BENH23K21104004

DTC	DTC name	DTC detecting condition
C00	None	—
C12 (Page 1A-21)	CKP Sensor "A" Circuit	The signal does not reach ECM for 1 sec. or more, after receiving the IAP sensor signal.
C13 (Page 1A-23)	IAP Sensor Circuit	The sensor output voltage is higher than 4.85 V. / The sensor output voltage is lower than 0.2 V.
C14 (Page 1A-25)	TP Sensor/Switch "A" Circuit	The sensor output voltage is higher than 4.8 V. / The sensor output voltage is lower than 0.2 V.
C15 (Page 1A-27)	ECT Sensor Circuit	The sensor signal voltage is higher than 4.85 V. / The sensor signal voltage is lower than 0.1 V.
C16 (Page 1A-28)	Vehicle Speed Sensor "A"	The speed sensor signal is not input to ECM even if engine speed is more than 4000 rpm and throttle valve is open.
C21 (Page 1A-30)	IAT Sensor 1 Circuit	The sensor signal voltage is higher than 4.85 V. / The sensor signal voltage is lower than 0.2 V.
C23 (Page 1A-32)	TO sensor circuit Low/High	The sensor signal voltage is higher than 4.7 V. / The sensor signal voltage is lower than 0.2 V.
C24 (Page 1A-34)	Ignition Coil "A" Primary/Secondary Circuit	The ignition coil signal is interrupted 8 times or more continually although CKP signal is detected.
C32 (Page 1A-34)	Injector Circuit/Open – Cylinder 1	Faulty fuel injector signal is detected 4 times or more.
C40 (Page 1A-35)	ISC valve circuit malfunction	The circuit voltage of motor drive unusual
C41 (Page 1A-37)	Fuel Pump Circuit Low/High	Voltage is applied to fuel pump although fuel pump is turned OFF. / No voltage is applied to fuel pump although fuel pump is turned ON.
C42 (Page 1A-38)	Ignition Switch Signal Circuit	Ignition switch signal is not input to the ECM or Keyless Control Module.
C44 (Page 1A-39)	O2 Sensor Circuit Bank 1 Sensor 1	O2 sensor output voltage is not input to ECM during engine operation and running condition.
C60 (Page 1A-41)	Fan 1 Control Circuit	Cooling fan relay drive circuit voltage is not applied to the ECM for 3 sec.

Fail-Safe Function Table

BENH23K21104005

FI system is provided with fail-safe function to allow the engine to start and the motorcycle to run in a minimum performance necessary even under malfunction condition.

Item	Fail-safe mode	Starting ability	Running ability
IAP sensor	<ul style="list-style-type: none"> ECM controls actuators assuming that intake air pressure is 101.3 kPa (760 mmHg). ECM calculates basic fuel injection time from engine speed and TP. ECM stops A/F feedback (closed loop) control. 	"YES"	"YES"
TP sensor	<ul style="list-style-type: none"> ECM controls actuators assuming that TP is 105.6°. ECM stops A/F feedback (closed loop) control. 	"YES"	"YES"
ECT sensor	<ul style="list-style-type: none"> ECM controls actuators assuming that ECT is 60 °C (140 °F). ECM stops A/F feedback (closed loop) control. 	"YES"	"YES"
IAT sensor	<ul style="list-style-type: none"> ECM controls actuators assuming that IAT is 25 °C (77 °F). ECM stops A/F feedback (closed loop) control. 	"YES"	"YES"
O2 sensor	ECM stops A/F feedback (closed loop) control.	"YES"	"YES"
TO sensor	ECM stops fuel injection, ignition and fuel pump.	"NO"	"NO"
ISC valve	When motor disconnection or lock occurs, power from ECM is shut OFF.	"YES"	"YES"

NOTE

The engine can start and can run even if the signal in the table is not received from each sensor. But, the engine running condition is not complete, providing only emergency help (by fail-safe circuit). In this case, it is necessary to bring the motorcycle to the workshop for complete repair.

FI System Troubleshooting

BENH23K21104006

Customer Complaint Analysis

Record details of the problem (failure, complaint) and how it occurred as described by the customer. For this purpose, use of such an inspection form such as following will facilitate collecting information to the point required for proper analysis and diagnosis.

NOTE

This form is a standard sample. The form should be modified according to conditions and characteristics of each market.

Example: Customer problem inspection form

User name:	Model:	VIN:
Date of issue:	Date Reg.:	Date of problem: Mileage:

MIL condition	<input type="checkbox"/> Always ON / <input type="checkbox"/> Sometimes ON / <input type="checkbox"/> Always OFF / <input type="checkbox"/> Good condition
Malfunction display/code (LCD)	User mode: <input type="checkbox"/> No display / <input type="checkbox"/> Malfunction display ()
	Dealer mode: <input type="checkbox"/> No code / <input type="checkbox"/> Malfunction code ()

PROBLEM SYMPTOMS

<input type="checkbox"/> Difficult Starting <input type="checkbox"/> No cranking <input type="checkbox"/> No initial combustion <input type="checkbox"/> No combustion <input type="checkbox"/> Poor starting at (<input type="checkbox"/> cold / <input type="checkbox"/> warm / <input type="checkbox"/> always) <input type="checkbox"/> Other	<input type="checkbox"/> Poor Driveability <input type="checkbox"/> Hesitation on acceleration <input type="checkbox"/> Back fire / <input type="checkbox"/> After fire <input type="checkbox"/> Lack of power <input type="checkbox"/> Surging <input type="checkbox"/> Abnormal knocking <input type="checkbox"/> Engine rpm jumps briefly <input type="checkbox"/> Other
<input type="checkbox"/> Poor Idling <input type="checkbox"/> Poor fast Idle <input type="checkbox"/> Abnormal idling speed (<input type="checkbox"/> High / <input type="checkbox"/> Low) (r/min) <input type="checkbox"/> Unstable <input type="checkbox"/> Hunting (r/min to r/min) <input type="checkbox"/> Other	<input type="checkbox"/> Engine Stall when <input type="checkbox"/> Immediately after start <input type="checkbox"/> Throttle valve is opened <input type="checkbox"/> Throttle valve is closed <input type="checkbox"/> Load is applied <input type="checkbox"/> Other
<input type="checkbox"/> OTHERS:	

MOTORCYCLE/ENVIRONMENTAL CONDITION WHEN PROBLEM OCCURS	
Environmental condition	
Weather Temperature Frequency	<input type="checkbox"/> Fair / <input type="checkbox"/> Cloudy / <input type="checkbox"/> Rain / <input type="checkbox"/> Snow / <input type="checkbox"/> Always / <input type="checkbox"/> Other <input type="checkbox"/> Hot / <input type="checkbox"/> Warm / <input type="checkbox"/> Cool / <input type="checkbox"/> Cold (°C / °F) / <input type="checkbox"/> Always <input type="checkbox"/> Always / <input type="checkbox"/> Sometimes (times / day, month) / <input type="checkbox"/> Only once <input type="checkbox"/> Under certain condition
Road	<input type="checkbox"/> Urban / <input type="checkbox"/> Suburb / <input type="checkbox"/> Highway / <input type="checkbox"/> Mountainous (<input type="checkbox"/> Uphill / <input type="checkbox"/> Downhill) <input type="checkbox"/> Tarmacadam / <input type="checkbox"/> Gravel / <input type="checkbox"/> Other
Motorcycle condition	
Engine condition	<input type="checkbox"/> Cold / <input type="checkbox"/> Warming up phase / <input type="checkbox"/> Warmed up / <input type="checkbox"/> Always / <input type="checkbox"/> Other at starting <input type="checkbox"/> Immediately after start / <input type="checkbox"/> Racing without load / <input type="checkbox"/> Engine speed (r/min)
Motorcycle condition	During driving: <input type="checkbox"/> Constant speed / <input type="checkbox"/> Accelerating / <input type="checkbox"/> Decelerating <input type="checkbox"/> Right hand corner / <input type="checkbox"/> Left hand corner <input type="checkbox"/> At stop / <input type="checkbox"/> Motorcycle speed when problem occurs (km/h, mile/h) <input type="checkbox"/> Other:

Visual Inspection

Prior to diagnosis using the mode select switch, perform the following visual inspections. The reason for visual inspection is that mechanical failures (such as oil leakage) cannot be displayed on the screen with the use of mode select switch.

Inspection item		Referring section
Engine oil	Level	"Engine Oil Inspection" in Section 1E (Page 1E-5)
	Leakage	
Engine coolant	Level	"Engine Coolant Level Inspection" in Section 1F (Page 1F-4)
	Leakage	"Engine Cooling System Inspection" in Section 1F (Page 1F-6)
Fuel	Level	—
	Leakage	"Fuel Feed Hose Inspection" in Section 1G (Page 1G-5)
Air cleaner element	Dirt	"Air Cleaner Element Inspection" in Section 1D (Page 1D-9)
	Clogging	
Battery	Corrosion of terminal	"Battery Visual Inspection" in Section 1J (Page 1J-12)
Throttle cable	Play	"Throttle Cable Play On-Vehicle Inspection and Adjustment" in Section 1D (Page 1D-12)
Fuse	Burning	
MIL	Operation	"Self-Diagnosis Function" (Page 1A-4)
Exhaust system	Leakage of exhaust gas	"Exhaust System Inspection" in Section 1K (Page 1K-4)
	Noise	
Harness coupler	Disconnection	
	Poor contact	

C12: CKP Sensor “A” Circuit

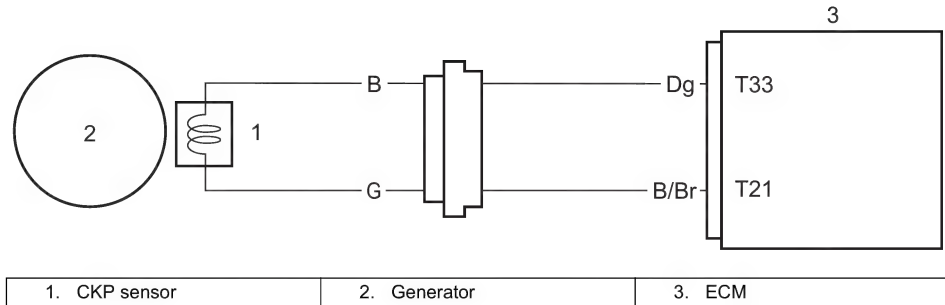
BENH23K21104007

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The CKP sensor signal does not reach ECM for 1 sec. or more, after receiving the IAP sensor signal.	<ul style="list-style-type: none">• Metal particles or foreign material being stuck on the CKP sensor and rotor tip• CKP sensor• CKP sensor circuit• ECM

Wiring Diagram

Refer to “FI System Wiring Diagram” (Page 1A-6).



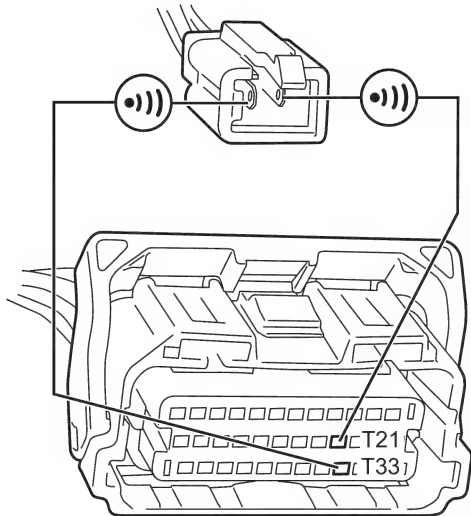
IH23K1110009-01

Troubleshooting

Step 1

CKP sensor signal circuit and ground circuit check

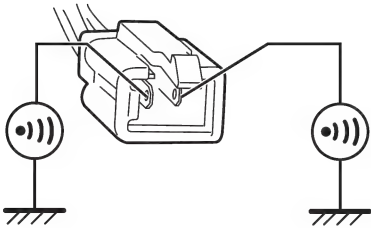
- 1) Turn the ignition switch OFF.
- 2) Disconnect the CKP sensor coupler and ECM coupler.
 - CKP sensor: (Page 1C-9)
 - ECM: (Page 1C-2)
- 3) Check for proper terminal connection to the CKP sensor coupler and ECM coupler.
- 4) If connections are OK, check the following points.
 - Resistance
 - Dg wire and B/Br wire: less than 1 Ω



IH23K1110017-01

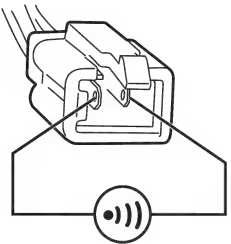
- Between Dg wire and ground: infinity

- Between B/Br wire and ground: infinity



IG12K1110015-01

- Between the Dg wire terminal and B/Br wire terminal at CKP sensor coupler: infinity



IG12K1110016-01

- Voltage
 - Turn the ignition switch ON.
 - Dg wire and B/Br wire: approx. 0 V

Is check result OK?

- Yes Go to Step 2.
- No Repair or replace the defective wire harness.

Step 2**CKP sensor resistance check**

- 1) Turn the ignition switch OFF.
- 2) Check the CKP sensor resistance. Refer to "CKP Sensor Resistance" under "CKP Sensor Inspection" in Section 1C (Page 1C-8).

Is check result OK?

- Yes Go to Step 3.
- No Replace the CKP sensor with a new one.
 ☞ (Page 1C-8)

Step 3**CKP sensor peak voltage check**

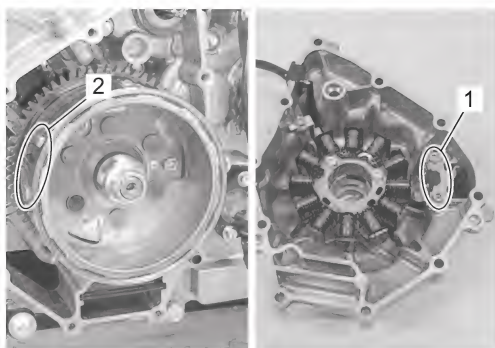
- 1) Connect the ECM coupler.
- 2) Check the CKP sensor peak voltage with the peak volt adaptor. Refer to "CKP Sensor Peak Voltage" under "CKP Sensor Inspection" in Section 1C (Page 1C-8).

Is check result OK?

- Yes Go to Step 4.
- No Replace the CKP sensor with a new one.
 ☞ (Page 1C-8)

Step 4**CKP sensor and generator rotor check**

- 1) Turn the ignition switch OFF.
- 2) Remove the generator cover. Refer to "Generator Removal" in Section 1J (Page 1J-5).
- 3) Check that end face of the CKP sensor (1) and generator rotor teeth (2) are free from any metal particles and damage.



IG12K1110017-01

Is check result OK?

- Yes Replace the ECM with a known good one, and inspect it again. ☞ (Page 1C-2)
- No Clean or replace defective parts.

C13: IAP Sensor Circuit

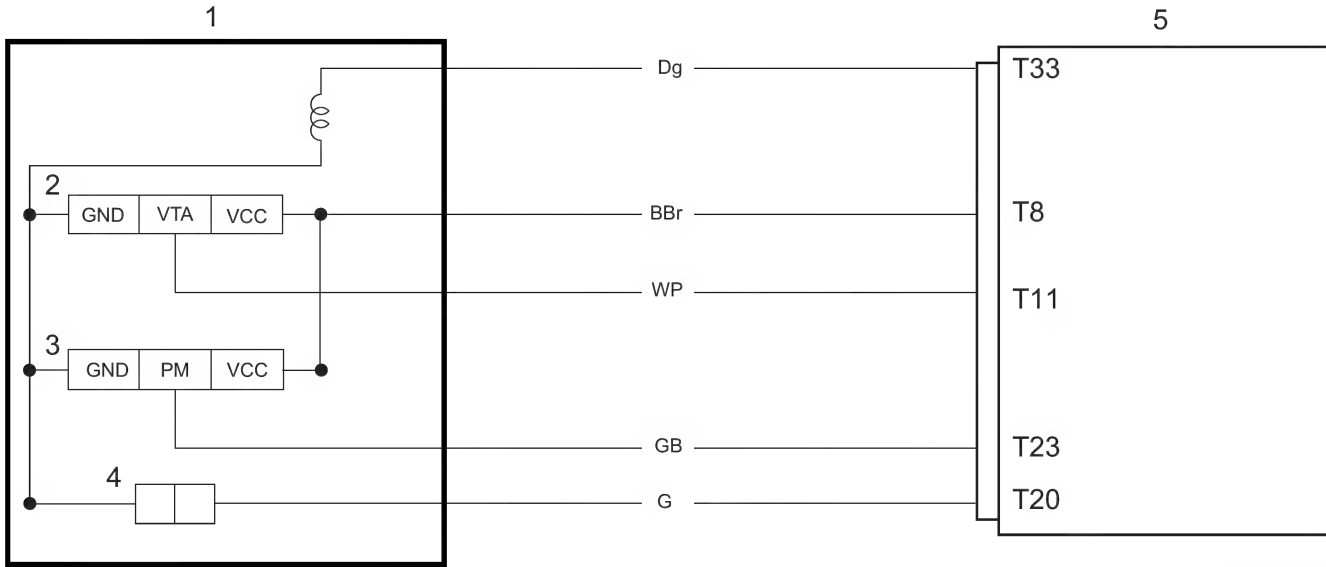
BENH23K21104008

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The sensor output voltage is higher than 4.85 V. / The sensor output voltage is lower than 0.2 V.	<ul style="list-style-type: none">• Vacuum passage between throttle body and IAP sensor• IAP sensor• IAP sensor circuit• ECM

Wiring Diagram

Refer to “FI System Wiring Diagram” (Page 1A-6).



IH23K1110010-01

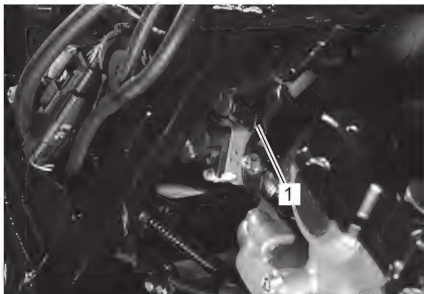
1. IAP/TP/IAT sensor	3. IAP sensor	5. ECM
2. TP sensor	4. IAT sensor	

Troubleshooting

Step 1

IAP sensor power supply circuit check

- 1) Turn the ignition switch OFF.
- 2) Open the front box lid.
- 3) Remove the following parts.
 - a) Under cowl: (Page 9D-25)
 - b) Front box: (Page 9D-28)
 - c) Right frame cover: (Page 9D-30)
- 4) Disconnect the IAP/TP/IAT sensor coupler (1).

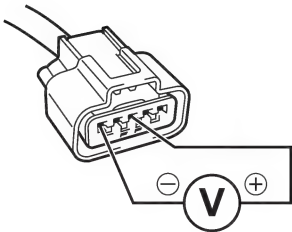


IH23K1110012-03

- 5) Check for proper terminal connection to the IAP/TP/IAT/ISC sensor coupler.

- 6) If connections are OK, turn the ignition switch ON.
- 7) Measure the voltage between the R wire and B/Br wire.

IAP sensor power supply voltage
[Standard]: 4.75 – 5.25 V



IF42J1110014-01

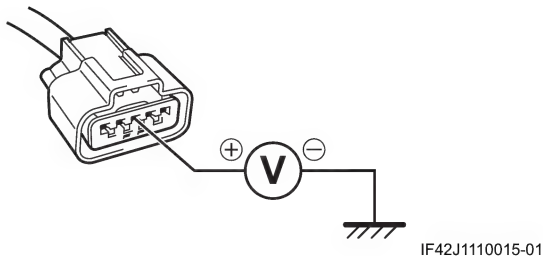
Is check result OK?

- | | |
|-----|---------------|
| Yes | Go to Step 3. |
| No | Go to Step 2. |

Step 2

IAP sensor ground circuit check

- 1) Measure the voltage between the R wire and ground.



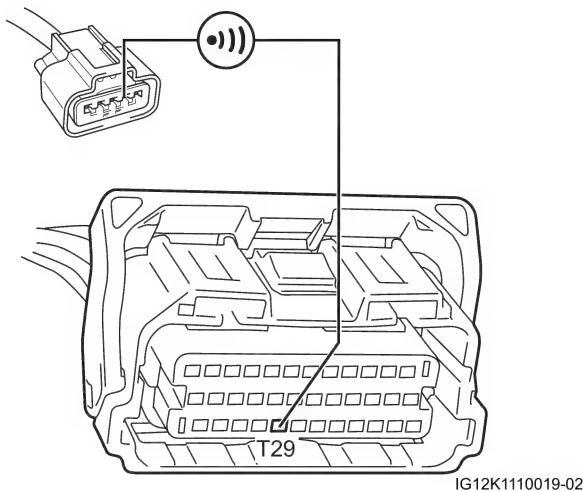
Is voltage same as Step 1?

- Yes Repair or replace the B/Br wire.
- No Repair or replace the R wire.

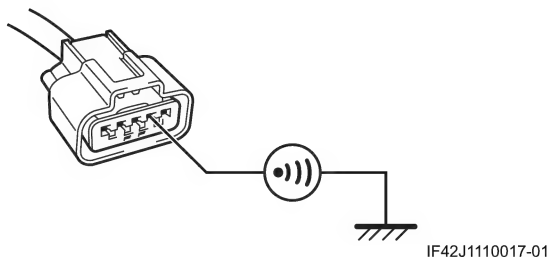
Step 3

IAP sensor signal circuit check

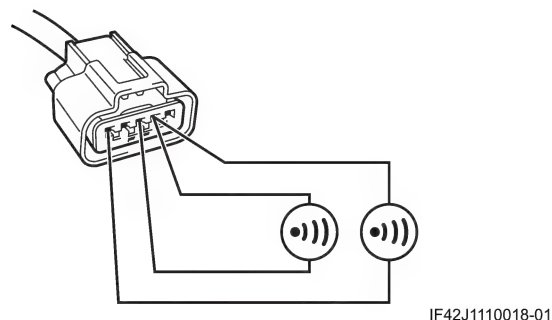
- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM coupler. (Page 1C-2)
- 3) Check for proper terminal connection to the ECM coupler.
- 4) If connections are OK, check the following points.
 - Resistance
 - Br wire: less than 1 Ω



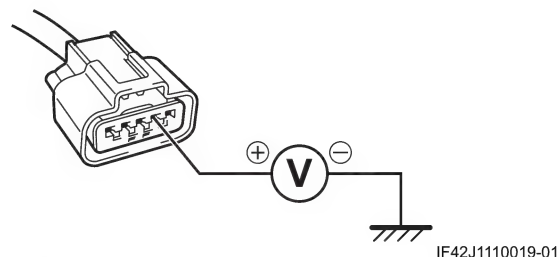
- Between Br wire and ground: infinity



- Br wire terminal and other terminal at IAP/TP/IAT/ISC sensor coupler: infinity



- Voltage
 - Turn the ignition switch ON.
 - Br wire: approx. 0 V



Is check result OK?

- Yes Go to Step 4.
- No Repair or replace the Br wire.

Step 4

IAP sensor output voltage at idle speed check

- 1) Turn the ignition switch OFF.
- 2) Connect the ECM coupler and IAP/TP/IAT/ISC sensor coupler.
- 3) Run the engine at idle speed and check the IAP sensor voltage between the Br wire and B/Br wire. Refer to "IAP Sensor Output Voltage" under "IAP/TP/IAT Sensor Inspection" in Section 1C (Page 1C-3).

Is check result OK?

- Yes Replace the ECM with a known good one, and inspect it again. (Page 1C-2)
- No Replace the throttle body assembly with a new one. (Page 1D-13)

C14: TP Sensor/Switch “A” Circuit

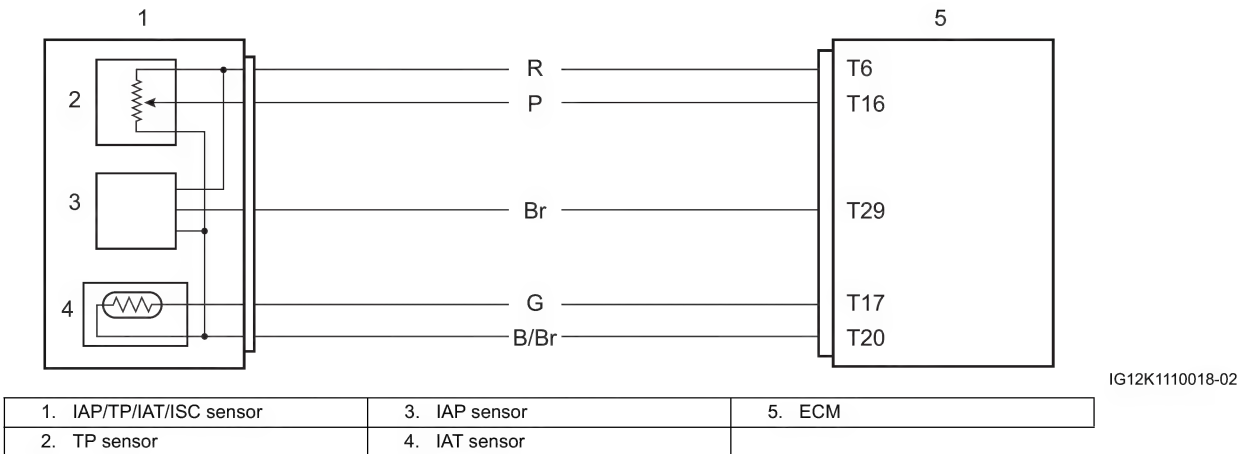
BENH23K21104009

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The sensor output voltage is higher than 4.8 V. / The sensor output voltage is lower than 0.2 V.	<ul style="list-style-type: none">• TP sensor• TP sensor circuit• ECM

Wiring Diagram

Refer to “FI System Wiring Diagram” (Page 1A-6).



Troubleshooting

Step 1

TP sensor power supply circuit check

- 1) Turn the ignition switch OFF.
- 2) Open the front box lid.
- 3) Remove the following parts.
 - a) Under cowl: (Page 9D-25)
 - b) Front box: (Page 9D-28)
 - c) Right frame cover: (Page 9D-30)
- 4) Disconnect the IAP/TP/IAT sensor coupler (1).

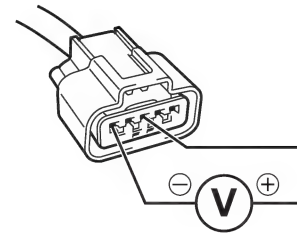


IH23K1110012-03

- 5) Check for proper terminal connection to the IAP/TP/IAT/ISC sensor coupler.
- 6) If connections are OK, turn the ignition switch ON.
- 7) Measure the voltage between the R wire and B/Br wire.

TP sensor power supply voltage

[Standard]: 4.75 – 5.25 V



IF42J1110014-01

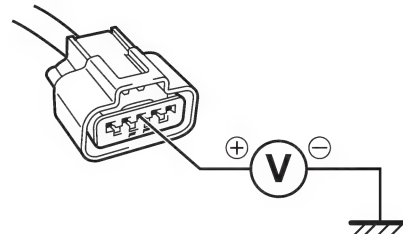
Is check result OK?

- Yes Go to Step 3.
- No Go to Step 2.

Step 2

TP sensor ground circuit check

- 1) Measure the voltage between the R wire and ground.



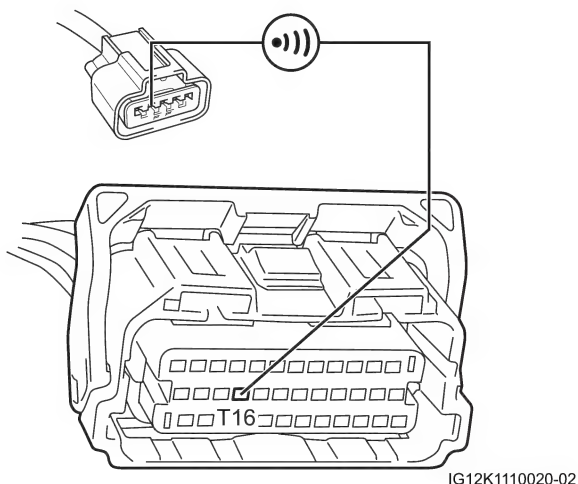
IF42J1110015-01

Is voltage same as Step 1?

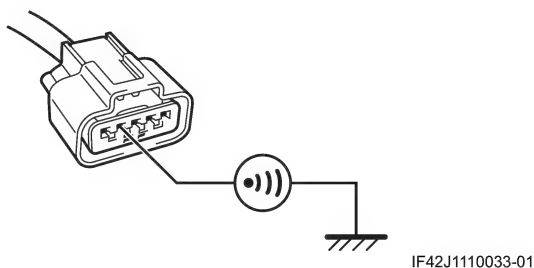
- Yes Repair or replace the B/Br wire.
- No Repair or replace the R wire.

Step 3**TP sensor signal circuit check**

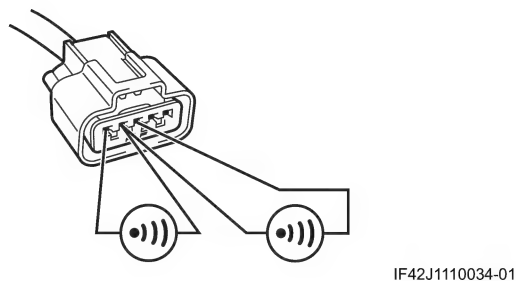
- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM coupler. (Page 1C-2)
- 3) Check for proper terminal connection to the ECM coupler.
- 4) If connections are OK, check the following points.
 - Resistance
 - P wire: less than 1 Ω



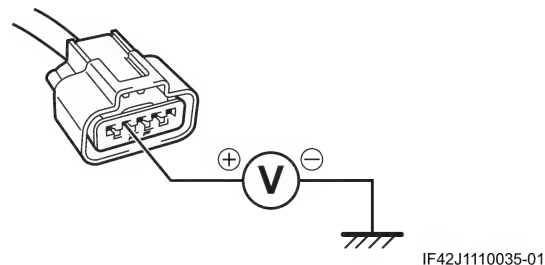
- Between P wire and ground: infinity



- Between P wire terminal and other terminal at IAP/TP/IAT/ISC sensor coupler: infinity



- Voltage
 - Turn the ignition switch ON.
 - P wire: approx. 0 V

**Is check result OK?**

- | | |
|-----|-------------------------------|
| Yes | Go to Step 4. |
| No | Repair or replace the P wire. |

Step 4**TP sensor output voltage check**

- 1) Turn the ignition switch OFF.
- 2) Connect the ECM coupler and the IAP/TP/IAT/ISC sensor coupler.
- 3) Turn the ignition switch ON.
- 4) Check the TP sensor voltage between the P wire and B/Br wire with turning the throttle grip open and close. Refer to "TP Sensor Output Voltage" under "IAP/TP/IAT Sensor Inspection" in Section 1C (Page 1C-3).

Is check result OK?

- | | |
|-----|--|
| Yes | Replace the ECM with a known good one, and inspect it again. (Page 1C-2) |
| No | Replace the throttle body assembly with a new one. (Page 1D-13) |

C15: ECT Sensor Circuit

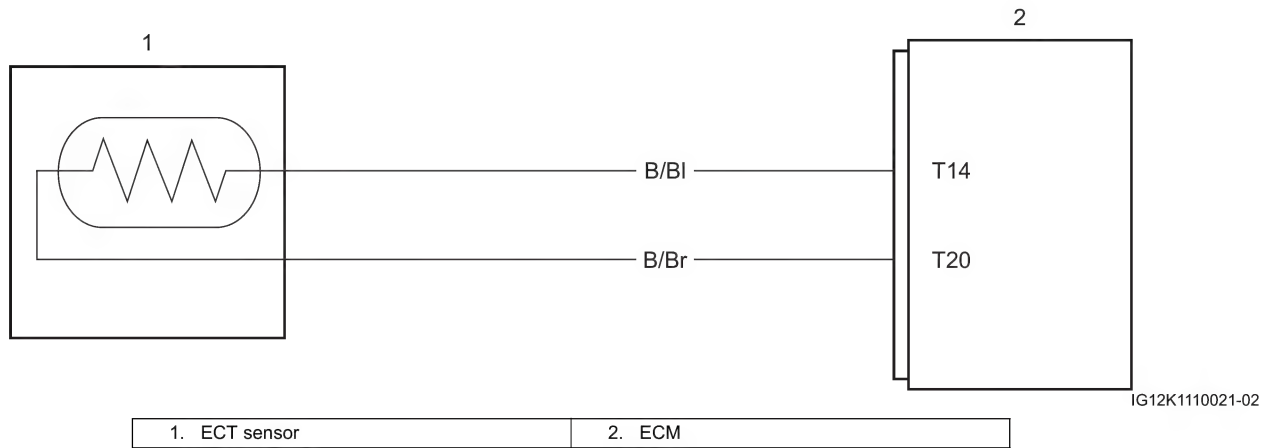
BENH23K21104010

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The sensor signal voltage is higher than 4.85 V. / The sensor signal voltage is lower than 0.1 V.	<ul style="list-style-type: none">ECT sensorECT sensor circuitECM

Wiring Diagram

Refer to "FI System Wiring Diagram" (Page 1A-6).

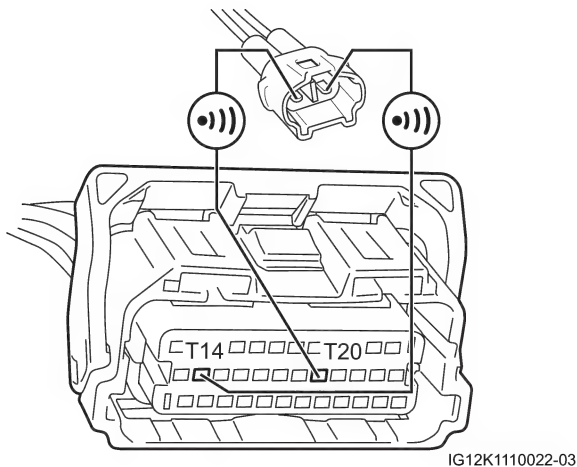


Troubleshooting

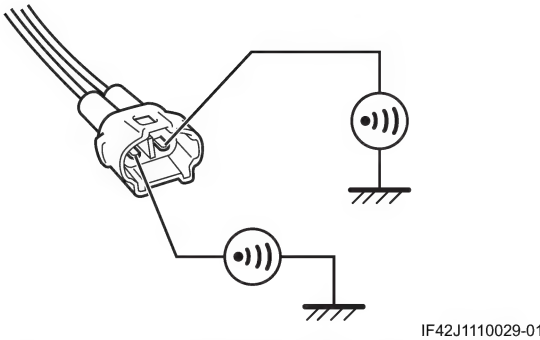
Step 1

ECT sensor signal circuit and ground circuit check

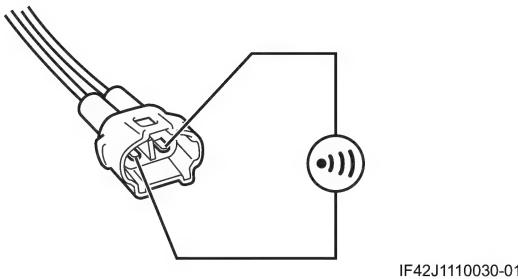
- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM coupler and ECT sensor coupler.
 - ECM: (Page 1C-2)
 - ECT sensor: (Page 1C-7)
- 3) Check for proper terminal connection to the ECM coupler and ECT sensor coupler.
- 4) If connections are OK, check the following points.
 - Resistance
 - B/BI wire and B/Br wire: less than 1 Ω



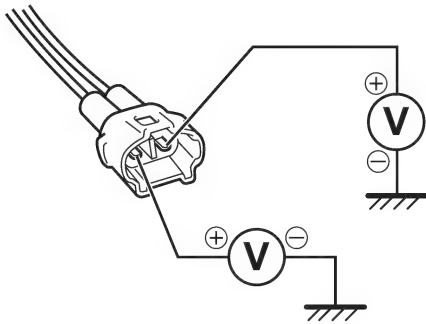
- Between B/BI wire and ground: infinity
- Between B/Br wire and ground: infinity



- Between B/BI wire terminal and B/Br wire terminal: infinity



- Voltage
 - Turn the ignition switch ON.
 - B/Bl wire and B/Br wire: approx. 0 V



IF42J1110031-01

Is check result OK?

- Yes Go to Step 2.
- No Repair or replace the defective wire harness.

Step 2**ECT sensor resistance check**

- 1) Turn the ignition switch OFF.
- 2) Check the ECT sensor resistance. ⚙️ (Page 1C-6)

Is check result OK?

- Yes Replace the ECM with a known good one, and inspect it again. ⚙️ (Page 1C-2)
- No Replace the ECT sensor with a new one. ⚙️ (Page 1C-7)

C16: Vehicle Speed Sensor “A”

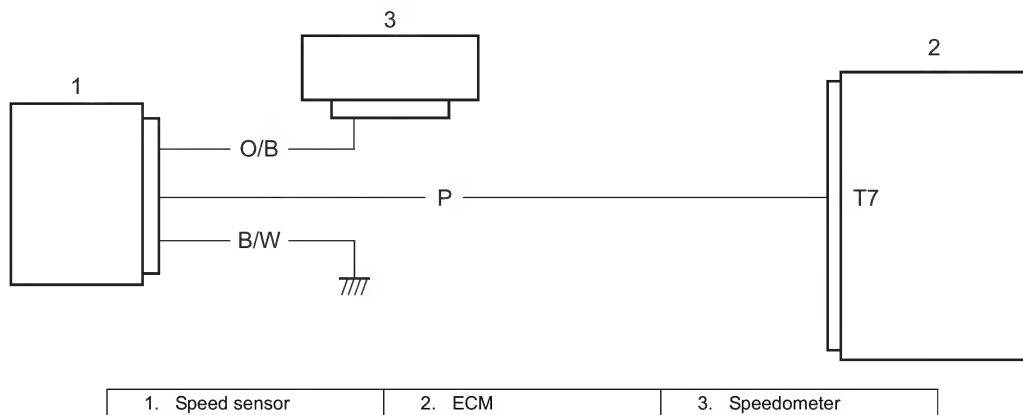
BENH23K21104011

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The speed sensor signal is not input to ECM even if engine speed is more than 4000 rpm and throttle valve is open.	<ul style="list-style-type: none"> • Metal particles or foreign material being stuck on the speed sensor and driveshaft spline • Speed sensor • Speed sensor circuit • ECM

Wiring Diagram

Refer to “FI System Wiring Diagram” (Page 1A-6).



IG12K1110023-02

1. Speed sensor	2. ECM	3. Speedometer
-----------------	--------	----------------

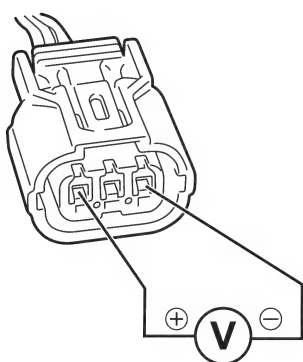
Troubleshooting

Step 1

Speed sensor power supply circuit check

- 1) Turn the ignition switch OFF.
- 2) Disconnect the speed sensor coupler. (Page 1C-11)
- 3) Check for proper terminal connection to the speed sensor coupler.
- 4) If connections are OK, turn the ignition switch ON.
- 5) Measure the voltage between the O/B wire and B/W wire.

Speed sensor power supply voltage [Standard]: Battery voltage



IG12K1110024-01

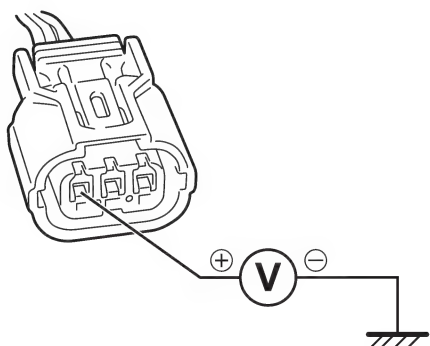
Is check result OK?

- Yes Go to Step 3.
- No Go to Step 2.

Step 2

Speed sensor ground circuit check

- 1) Measure the voltage between the O/B wire and ground.



IG12K1110025-01

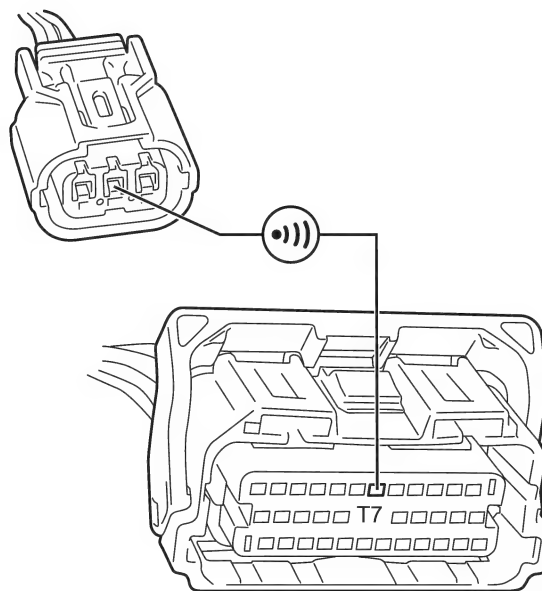
Is voltage same as Step 1?

- Yes Repair or replace the B/W wire.
- No Repair or replace the O/B wire.
- If this DTC is detected again, replace the speedometer and recheck DTC.

Step 3

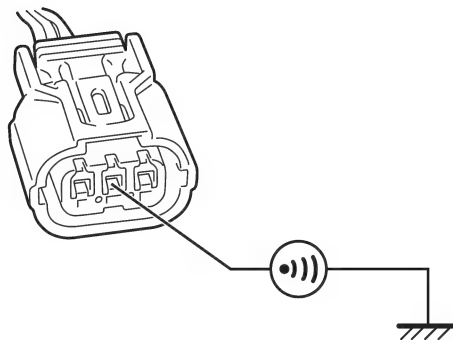
Speed sensor signal circuit check

- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM coupler. (Page 1C-2)
- 3) Check for proper terminal connection to the ECM coupler.
- 4) If connections are OK, check the following points.
 - Resistance
 - P wire: less than 1 Ω



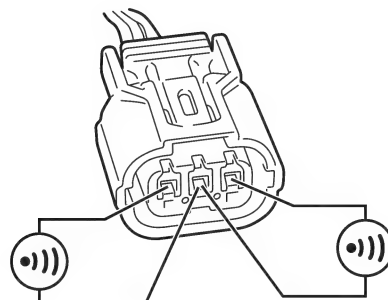
IG12K1110026-02

- Between P wire and ground: infinity



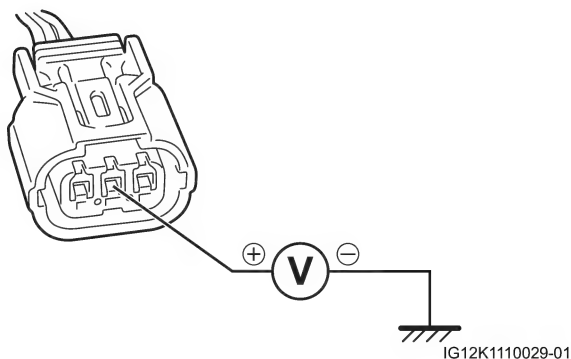
IG12K1110027-02

- Between P wire terminal and other terminal at speed sensor coupler: infinity



IG12K1110028-01

- Voltage
 - Turn the ignition switch ON.
 - P wire: approx. 0 V



Is check result OK?

- Yes Go to Step 4.
- No Repair or replace the P wire.

Step 4

Speed sensor check

- 1) Turn the ignition switch OFF.
- 2) Remove the speed sensor. (Page 1C-11)
- 3) Check the speed sensor. (Page 1C-11)

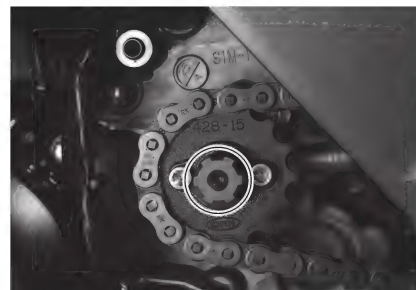
Is check result OK?

- Yes Go to Step 5.
- No Replace the speed sensor. (Page 1C-11)

Step 5

Driveshaft spline check

- 1) Remove the engine sprocket cover. Refer to "Engine Sprocket Removal and Installation" in Section 3A (Page 3A-4).
- 2) Check the driveshaft spline for metal particles or foreign material.



Is check result OK?

- Yes Replace the ECM with a known good one, and inspect it again. (Page 1C-2)
- No Clean or replace defective parts.

C21: IAT Sensor 1 Circuit

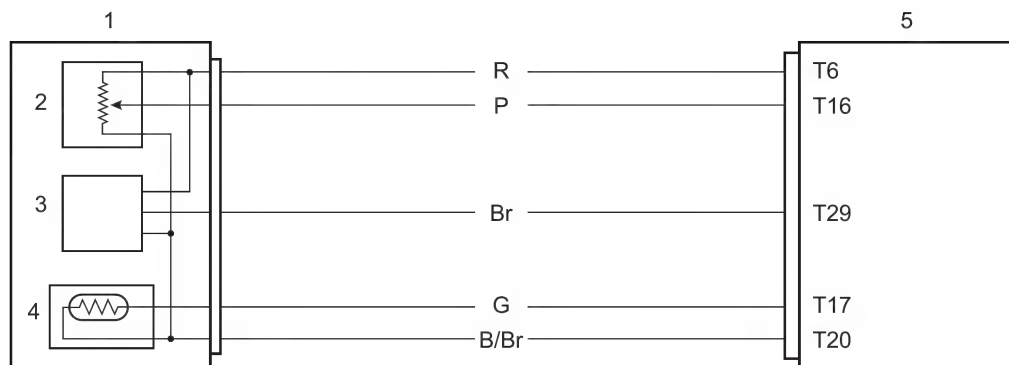
BENH23K21104012

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The sensor output voltage is higher than 4.85 V. / The sensor output voltage is lower than 0.2 V.	<ul style="list-style-type: none"> • IAT sensor • IAT sensor circuit • ECM

Wiring Diagram

Refer to "FI System Wiring Diagram" (Page 1A-6).



1. IAP/TP/IAT sensor	3. IAP sensor	5. ECM
2. TP sensor	4. IAT sensor	

Troubleshooting

Step 1

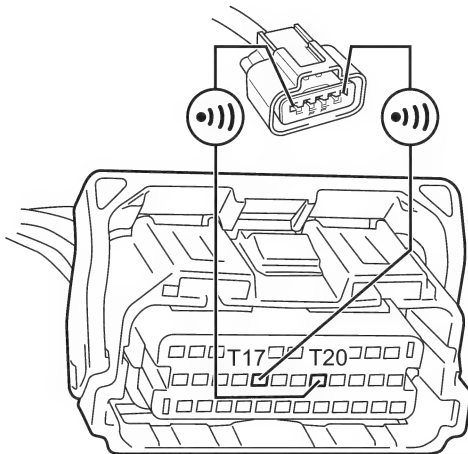
IAT sensor signal circuit and ground circuit check

- 1) Turn the ignition switch OFF.
- 2) Open the front box lid.
- 3) Remove the following parts.
 - a) Under cowling: (Page 9D-25)
 - b) Front box: (Page 9D-28)
 - c) Right frame cover: (Page 9D-30)
- 4) Disconnect the IAP/TP/IAT sensor coupler (1).



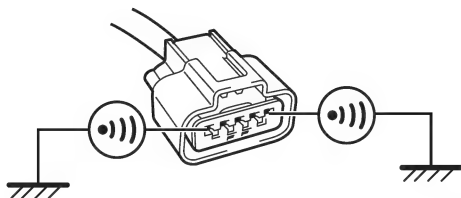
IH23K1110012-03

- 5) Disconnect the ECM coupler. (Page 1C-2)
- 6) Check for proper terminal connection to the IAP/TP/IAT sensor coupler and ECM coupler.
- 7) If connections are OK, check the following points.
 - Resistance
 - G wire and B/Br wire: less than 1 Ω



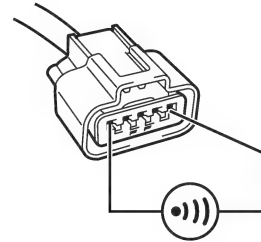
IG12K1110031-02

- Between G wire and ground: infinity
- Between B/Br wire and ground: infinity



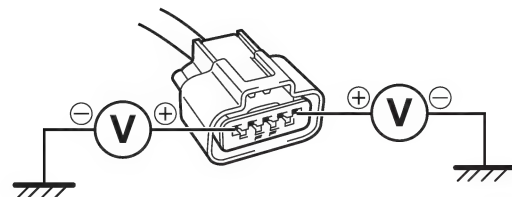
IF42J1110023-01

- Between G wire terminal and B/Br wire terminal at IAP/TP/IAT sensor coupler: infinity



IF42J1110024-01

- Voltage
 - Turn the ignition switch ON.
 - G wire and B/Br wire: approx. 0 V



IF42J1110025-02

Is check result OK?

- | | |
|-----|---|
| Yes | Go to Step 2. |
| No | Repair or replace the defective wire harness. |

Step 2

IAT sensor resistance check

- 1) Turn the ignition switch OFF.
- 2) Check the IAT sensor resistance. Refer to "IAT Sensor Resistance" under "IAP/TP/IAT Sensor Inspection" in Section 1C (Page 1C-3).

Is check result OK?

- | | |
|-----|--|
| Yes | Replace the ECM with a known good one, and inspect it again. (Page 1C-2) |
| No | Replace the throttle body assembly with a new one. (Page 1D-13) |

C23: TO Sensor Circuit Low/High

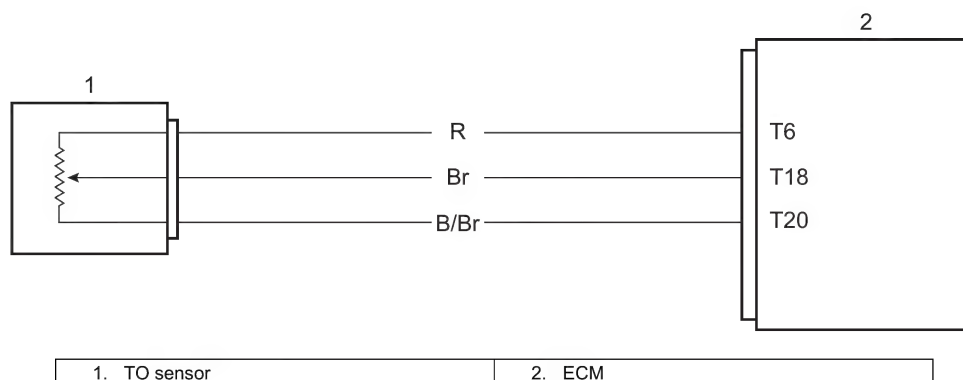
BENH23K21104013

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The sensor signal voltage is higher than 4.7 V. / The sensor signal voltage is lower than 0.2 V.	<ul style="list-style-type: none"> • TO sensor • TO sensor circuit • ECM

Wiring Diagram

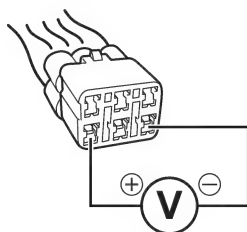
Refer to "FI System Wiring Diagram" (Page 1A-6).



IG12K1110032-02

Troubleshooting**Step 1****TO sensor power supply circuit check**

- 1) Turn the ignition switch OFF.
- 2) Disconnect the TO sensor coupler. (Page 1C-10)
- 3) Check for proper terminal connection to the TO sensor coupler.
- 4) If connections are OK, turn the ignition switch ON.
- 5) Measure the voltage between the R wire and B/Br wire.

TO sensor power supply voltage**[Standard]: 4.5 – 5.5 V**

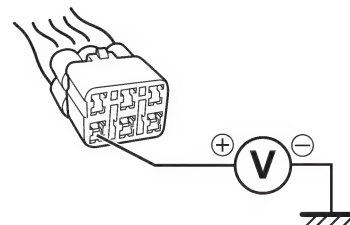
ID26J1110153-02

Is check result OK?

- Yes Go to Step 3.
- No Go to Step 2.

Step 2**TO sensor ground circuit check**

- 1) Measure the voltage between the R wire and ground.



ID26J1110154-02

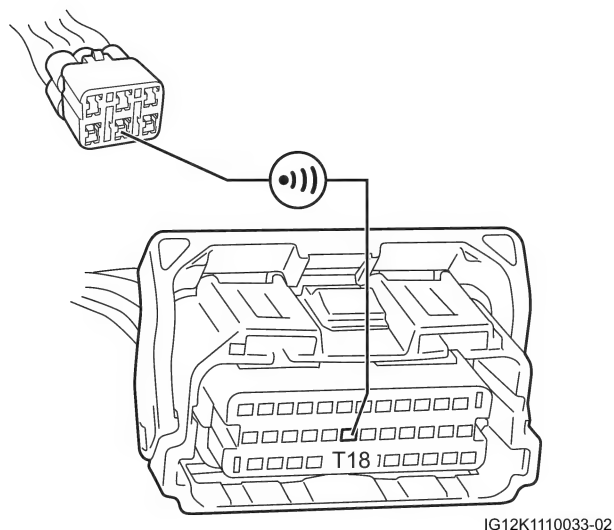
Is voltage same as Step 1?

- Yes Repair or replace the B/Br wire.
- No Repair or replace the R wire.

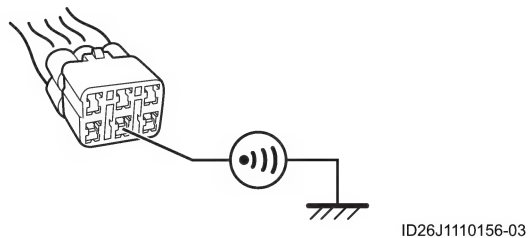
Step 3

TO sensor signal circuit check

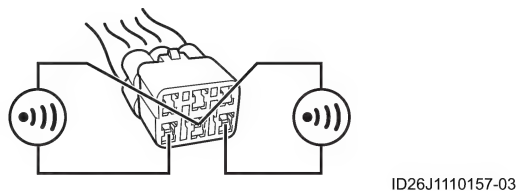
- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM coupler. (Page 1C-2)
- 3) Check for proper terminal connection to the ECM coupler.
- 4) If connections are OK, check the following points.
 - Resistance
 - Br wire: less than 1 Ω



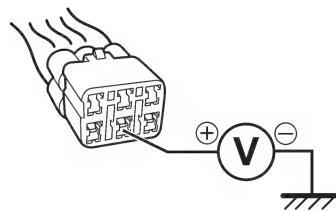
- Between Br wire and ground: infinity



- Between Br wire terminal and other terminal at TO sensor coupler: infinity



- Voltage
 - Turn the ignition switch ON.
 - Br wire: approx. 0 V



Is check result OK?

- | | |
|-----|--------------------------------|
| Yes | Go to Step 4. |
| No | Repair or replace the Br wire. |

Step 4

TO sensor output voltage check

- 1) Turn the ignition switch OFF.
- 2) Connect the ECM coupler and TO sensor coupler.
- 3) Check the TO sensor output voltage. Refer to "TO Sensor Output Voltage" under "TO Sensor Inspection" in Section 1C (Page 1C-10).

Is check result OK?

- | | |
|-----|--|
| Yes | Replace the ECM with a known good one, and inspect it again. (Page 1C-2) |
| No | Replace the TO sensor with a new one. (Page 1C-10) |

C24: Ignition Coil “A” Primary/Secondary Circuit

BENH23K21104014

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The ignition coil signal is interrupted 8 times or more continually although CKP signal is detected.	Refer to “No Spark or Poor Spark” in Section 1H (Page 1H-2).

C32: Injector Circuit/Open – Cylinder 1

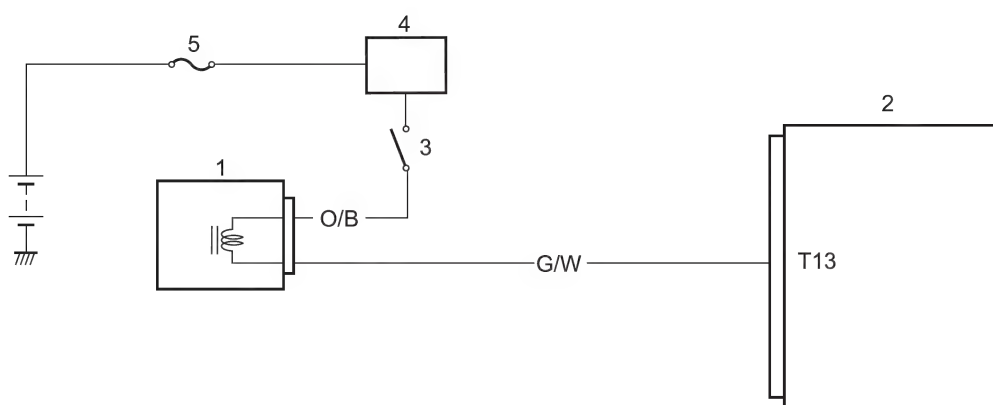
BENH23K21104015

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Faulty fuel injector signal is detected 4 times or more.	<ul style="list-style-type: none"> Fuel injector Fuel injector circuit ECM

Wiring Diagram

Refer to “FI System Wiring Diagram” (Page 1A-6).

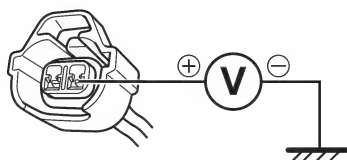


IG12K1110034-02

1. Fuel injector	3. Ignition switch	5. Main fuse
2. ECM	4. Regulator/rectifier	

Troubleshooting**Step 1****Fuel injector power supply voltage check**

- 1) Turn the ignition switch OFF.
- 2) Disconnect the fuel injector coupler. Refer to “Fuel Injector Removal and Installation” in Section 1G (Page 1G-15).
- 3) Check for proper terminal connection to the fuel injector coupler.
- 4) If connections are OK, turn the ignition switch ON.
- 5) Measure the voltage between the O/B wire and ground.

Fuel injector power supply voltage**[Standard]: Battery voltage**

IF04K1110023-01

Is check result OK?

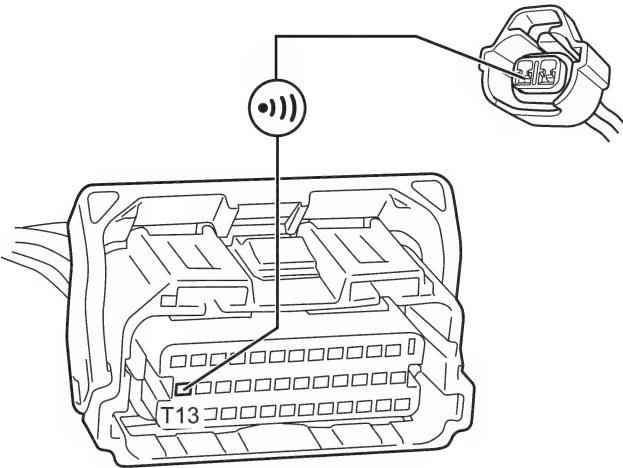
- Yes Go to Step 2.
- No Repair or replace the O/B wire.

Step 2**Fuel injector drive circuit check**

- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM coupler. (Page 1C-2)
- 3) Check for proper terminal connection to the ECM coupler.

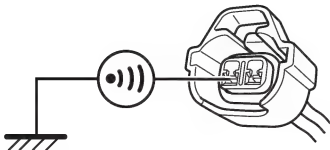
1A-35 Engine General Information and Diagnosis:

- 4) If connections are OK, check the following points.
- Resistance
 - G/W wire: less than 1 Ω



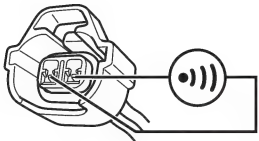
IG12K1110035-03

- Between G/W wire and ground: infinity



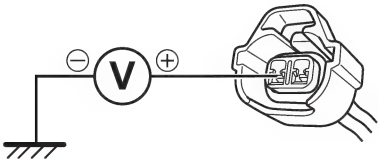
IF04K1110031-01

- Between G/W wire terminal and O/B wire terminal at fuel injector coupler: infinity



IF04K1110032-01

- Voltage
 - Turn the ignition switch ON.
 - G/W wire: approx. 0 V



IF04K1110033-01

Is check result OK?

- Yes Go to Step 3.
- No Repair or replace the G/W wire.

Step 3

Fuel injector resistance check

- 1) Turn the ignition switch OFF.
- 2) Check the fuel injector resistance. (Page 1G-14)

Is check result OK?

- Yes Replace the ECM with a known good one, and inspect it again. (Page 1C-2)
- No Replace the fuel injector with a new one. (Page 1G-15)

C40: ISC Valve Circuit Malfunction

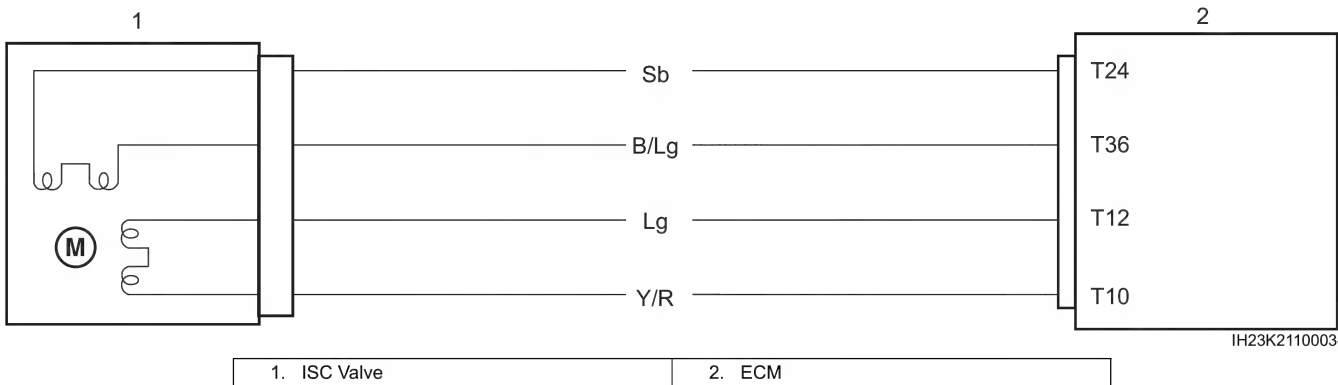
BENH23K21104021

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
The circuit voltage of motor drive is unusual.	<ul style="list-style-type: none">• ISC valve circuit.• ECM malfunction.

Wiring Diagram

Refer to "FI System Wiring Diagram" (Page 1A-6)



IH23K2110003-02

Troubleshooting

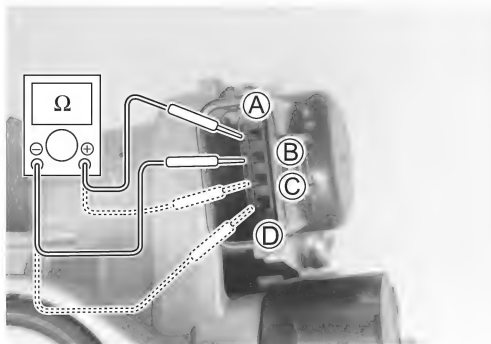
Step 1

ISC Valve circuit open or shorted to ground

- 1) Turn ignition switch OFF.
- 2) Disconnect ISC valve coupler. Refer to "ISC Valve Removal and Installation" in Section 1C (Page 1C-5)
- 3) Check ISC valve coupler.
- 4) If OK, then check the ISC valve resistance. Measure the ISC valve resistance between terminal A and terminal B, terminal C and terminal D.

ISC valve resistance

[Standard]: Approx. 20 Ω at 20 °C



IH23K2110004-01

- 5) If OK, then check the ISC valve continuity.

ISC valve continuity

[Standard]: Infinity

Is check result OK?

- Yes Go to step 2.
- No Replace ISC valve with a new one.

Step 2

ECM malfunction check

Are the resistance and continuity OK?

- Yes
- Wire open or shorted to ground
 - Intermittent trouble or faulty ECM.
 - Recheck each terminal and wire harness for open circuit and poor connection.
 - Replace ECM with a known good one, and inspect it again.
- No Replace ISC valve with a new one.

C41: Fuel Pump Circuit Low/High

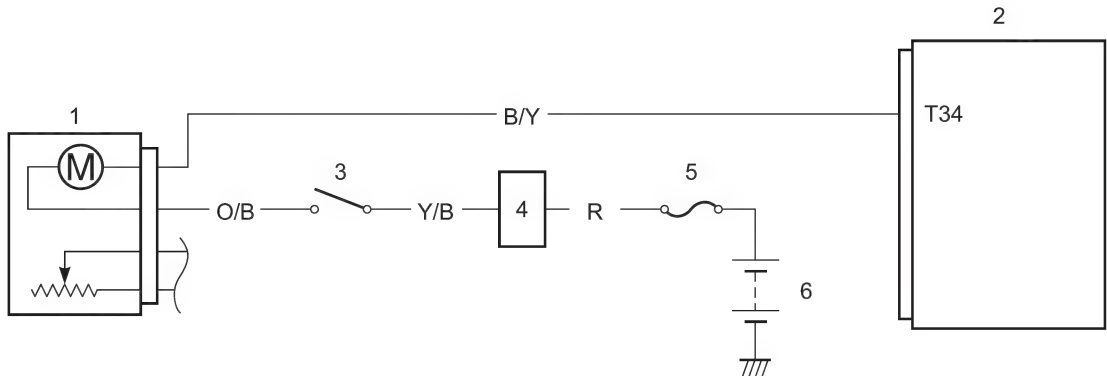
BENH23K21104016

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Voltage is applied to fuel pump although fuel pump is turned OFF. / No voltage is applied to fuel pump although fuel pump is turned ON.	<ul style="list-style-type: none">Fuel pumpFuel pump circuitECM

Wiring Diagram

Refer to "FI System Wiring Diagram" (Page 1A-6).



IG12K1110052-01

1. Fuel pump	3. Ignition switch	5. Main fuse
2. ECM	4. Regulator/rectifier	6. Battery

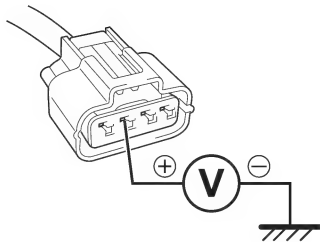
Troubleshooting

Step 1

Fuel pump power supply voltage check

- Turn the ignition switch OFF.
- Disconnect the fuel pump coupler. Refer to "Fuel Pump Assembly Removal and Installation" in Section 1G (Page 1G-11).
- Check for proper terminal connection to the fuel pump coupler.
- If connections are OK, turn the ignition switch ON.
- Measure the voltage between the O/B wire and ground.

Fuel pump power supply voltage
[Standard]: Battery voltage



IF42J1110044-01

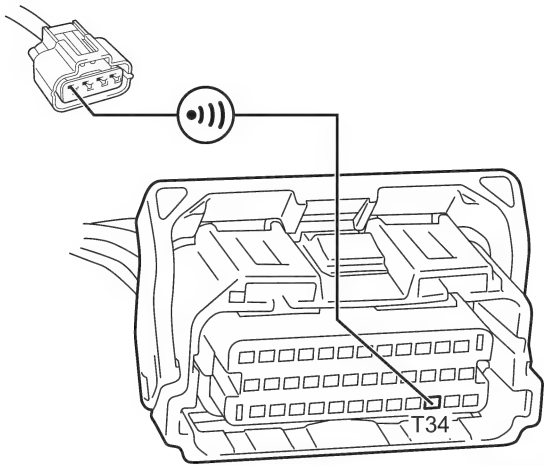
Is check result OK?

- Yes Go to Step 2.
- No Repair or replace the O/B wire.

Step 2

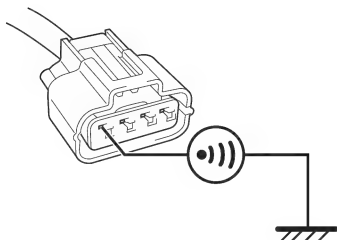
Fuel pump drive circuit check

- Turn the ignition switch OFF.
- Disconnect the ECM coupler. (Page 1C-2)
- Check for proper terminal connection to the ECM coupler.
- If connections are OK, check the following points.
 - Resistance
 - B/Y wire: less than 1 Ω



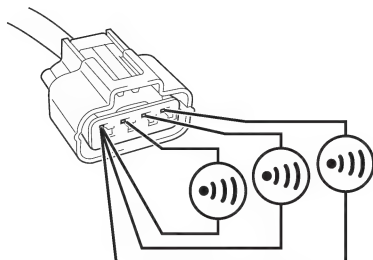
IG12K1110053-02

- Between B/Y wire and ground: infinity



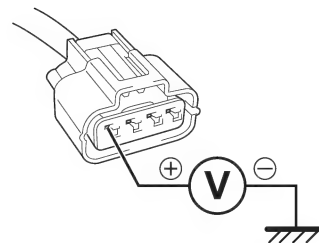
IF42J1110046-01

- Between B/Y wire terminal and other terminal at fuel pump coupler: infinity



IF42J1110047-01

- Voltage
 - Turn the ignition switch ON.
 - B/Y wire: approx. 0 V



IF42J1110048-01

Is check result OK?

- Yes Go to Step 3.
- No Repair or replace the B/Y wire.

Step 3

Fuel pump operation check

- 1) Turn the ignition switch OFF.
- 2) Check the fuel pump operation. (Page 1G-4)

Is check result OK?

- Yes Replace the ECM with a known good one, and inspect it again. (Page 1C-2)
- No Replace the fuel pump with a new one. (Page 1G-11)

C42: Ignition Switch Circuit Malfunction

BENH23K21104019

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Ignition switch signal is not input to the ECM or Keyless Control Unit	<ul style="list-style-type: none"> • Ignition switch circuit • ECM or Keyless Control Module

Troubleshooting

NOTE

Refer to “Ignition Switch Inspection” in Section 1H (Page 1H-8)

C44: O2 Sensor Circuit Bank 1 Sensor 1

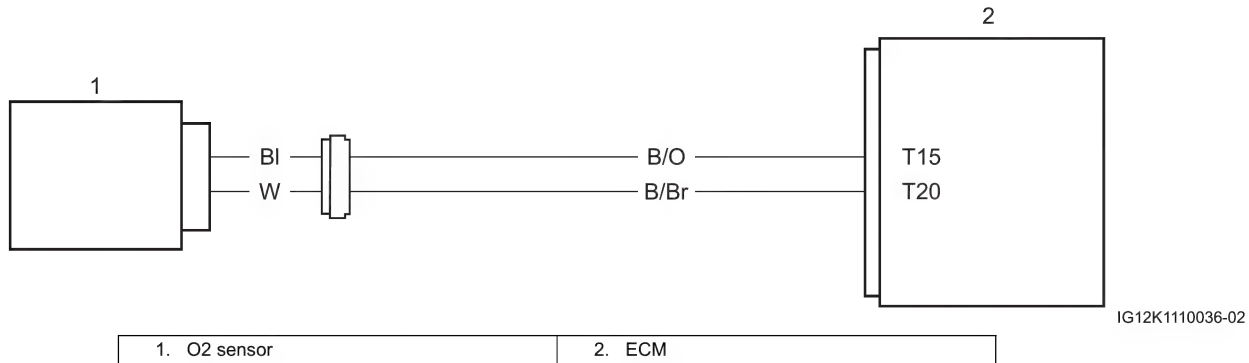
BENH23K21104017

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
O2 sensor output voltage is not input to ECM during engine operation and running condition.	<ul style="list-style-type: none">• O2 sensor• O2 sensor circuit• ECM

Wiring Diagram

Refer to "FI System Wiring Diagram" (Page 1A-6).

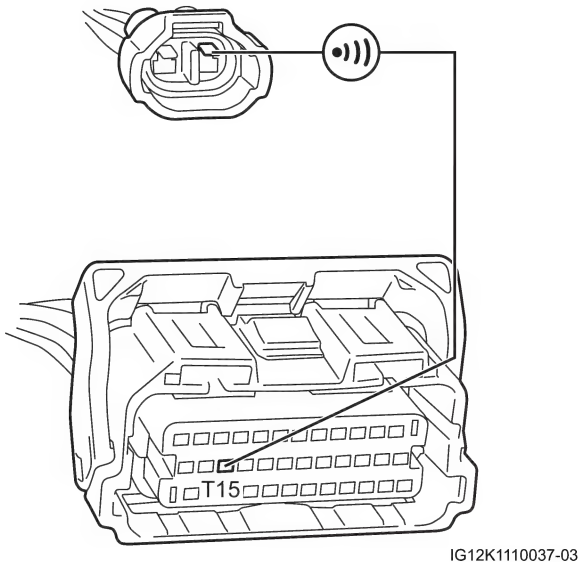


Troubleshooting

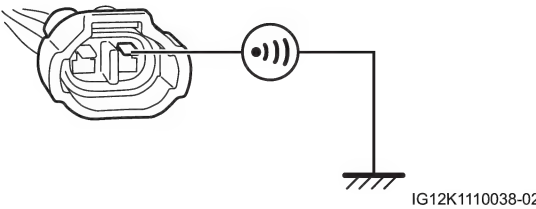
Step 1

O2 sensor signal circuit check

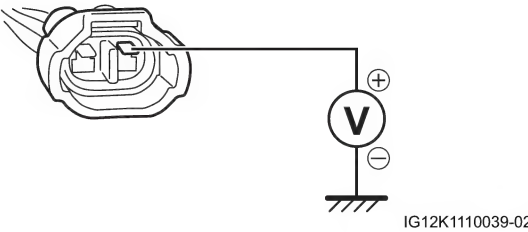
- 1) Turn the ignition switch OFF.
- 2) Disconnect the O2 sensor coupler and the ECM coupler.
 - O2 sensor: (Page 1C-8)
 - ECM: (Page 1C-2)
- 3) Check for proper terminal connection to the O2 sensor coupler and the ECM coupler.
- 4) If connections are OK, check the following points.
 - Resistance
 - B/O wire: less than 1 Ω



- Between B/O wire and ground: infinity



- Voltage
 - Turn the ignition switch ON.
 - B/O wire: approx. 0 V

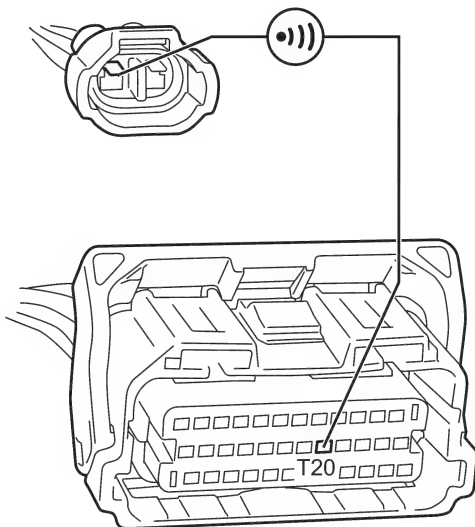


Is check result OK?

- Yes Go to Step 2.
- No Repair or replace the B/O wire.

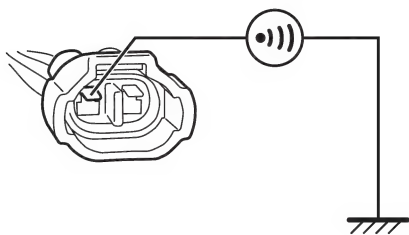
Step 2**O2 sensor ground circuit check**

- 1) Check the following points.
 - Resistance
 - B/Br wire: less than 1 Ω



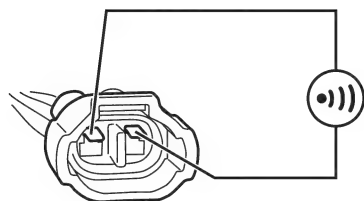
IG12K1110040-03

- Between B/Br wire and ground: infinity



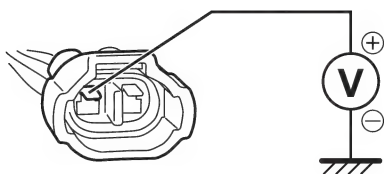
IG12K1110041-02

- Between B/Br wire terminal and B/O wire terminal at O2 sensor coupler: infinity



IG12K1110042-02

- Voltage
 - Turn the ignition switch ON.
 - B/Br wire: approx. 0 V



IG12K1110043-02

Is check result OK?

- Yes Go to Step 3.
- No Repair or replace the B/Br wire.

Step 3**O2 sensor output voltage check**

- 1) Turn the ignition switch OFF.
- 2) Connect the ECM coupler.
- 3) Warm up the engine enough.
- 4) Measure the O2 sensor voltage between the BI wire terminal and W wire terminal, in idling condition. (Page 1C-7)

Is check result OK?

- Yes Replace the ECM with a known good one, and inspect it again. (Page 1C-2)
- No Replace the O2 sensor with a new one. (Page 1C-8)

C60: Fan 1 Control Circuit

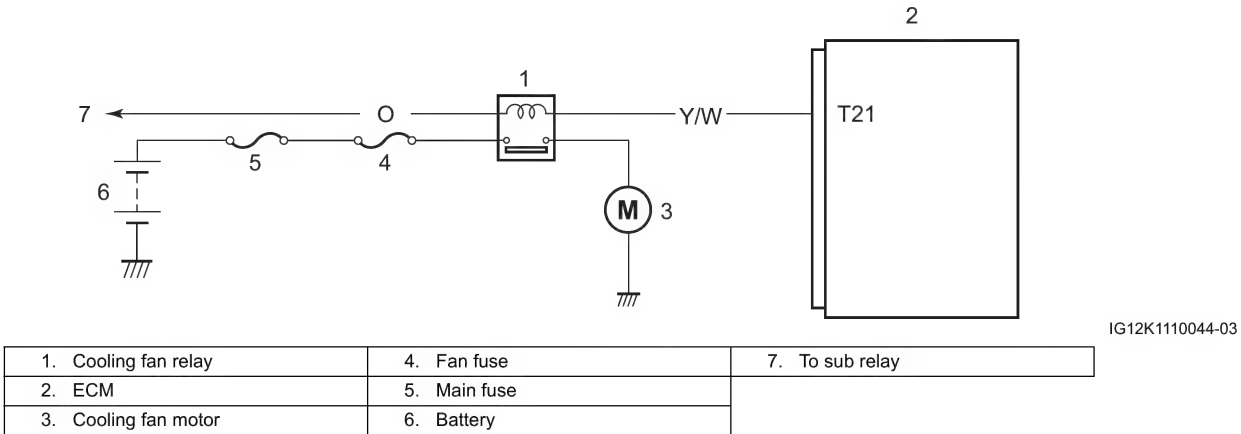
BENH23K21104018

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Cooling fan relay drive circuit voltage is not applied to the ECM for 3 sec.	<ul style="list-style-type: none">Cooling fan relay circuitECM

Wiring Diagram

Refer to "FI System Wiring Diagram" (Page 1A-6).

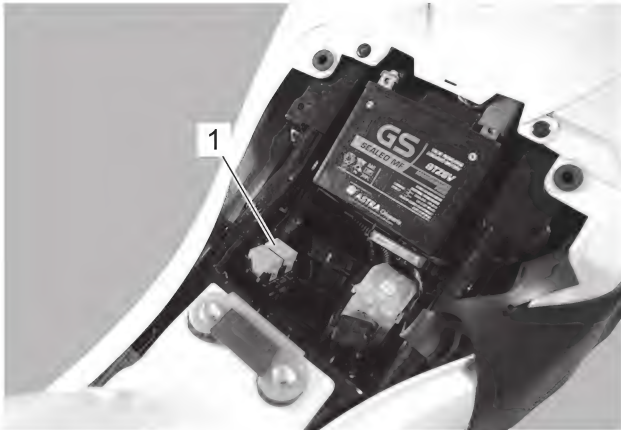


Troubleshooting

Step 1

Cooling fan relay power supply circuit check

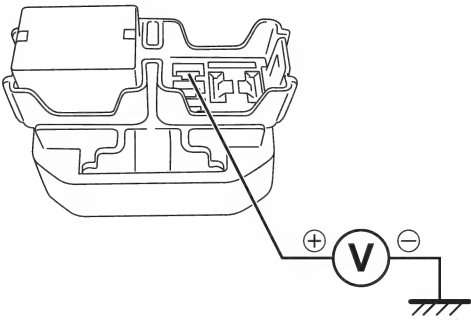
- 1) Turn the ignition switch OFF.
- 2) Open the passenger seat.
- 3) Disconnect the cooling fan relay (1).



IH23K1110014-01

- 4) Check for proper terminal connection to the cooling fan relay.
- 5) If connections are OK, turn the ignition switch ON.
- 6) Measure the voltage between O wire and ground.

Cooling fan relay power supply voltage
[Standard]: Battery voltage



IG12K1110046-02

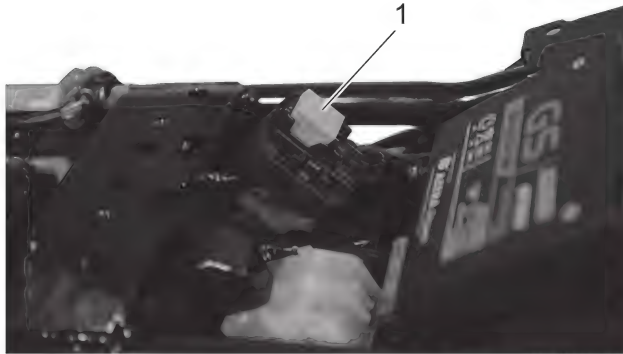
Is check result OK?

- Yes Go to Step 2.
- No Repair or replace the O wire.

Step 2

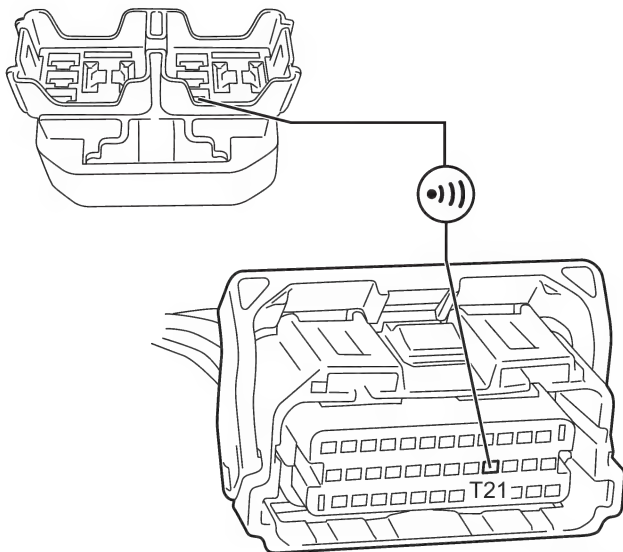
Cooling fan relay drive circuit check

- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM coupler. (Page 1C-2)
- 3) Disconnect the sub relay (1).



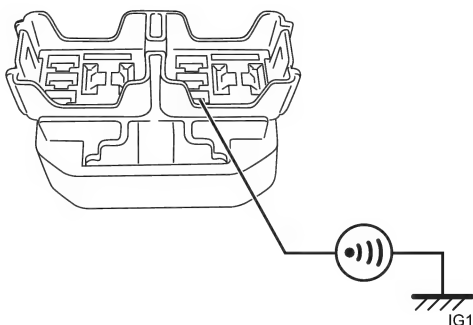
IH23K1110015-01

- 4) Check for proper terminal connection to the ECM coupler.
- 5) If connections are OK, check the following points.
 - Resistance
 - Y/W wire: less than 1 Ω



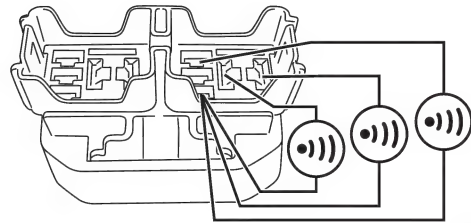
IG12K1110048-03

- Between Y/W wire and ground: infinity



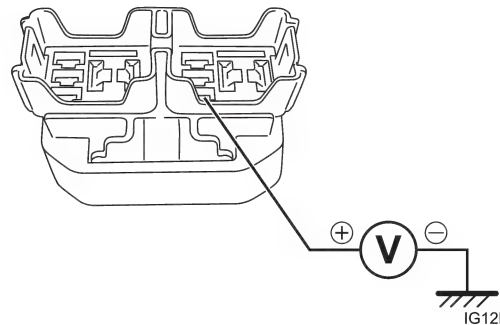
IG12K1110049-04

- Between Y/W wire terminal and other terminal at cooling fan relay coupler: Infinity



IG12K1110050-03

- Voltage
 - Turn the ignition switch ON.
 - Y/W wire: approx. 0 V



IG12K1110051-02

Is check result OK?

- | | |
|-----|---------------------------------|
| Yes | Go to Step 3. |
| No | Repair or replace the Y/W wire. |

Step 3

Cooling fan relay check

- 1) Check the cooling fan relay. (Page 1F-12)

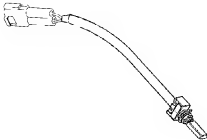
Is check result OK?

- | | |
|-----|--|
| Yes | Replace the ECM with a known good one, and inspect it again. (Page 1C-2) |
| No | Replace the cooling fan relay with a new one. |

Special Tools and Equipment

Special Tool

BENH23K21108001

<p>09930-82760</p> <p>Mode selection switch</p> <p>☞ (Page 1A-5) /</p> <p>☞ (Page 1A-16) /</p> <p>☞ (Page 1A-16)</p>		
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Emission Control Devices

Precautions

Precautions for Emission Control Devices

BENH23K21200001

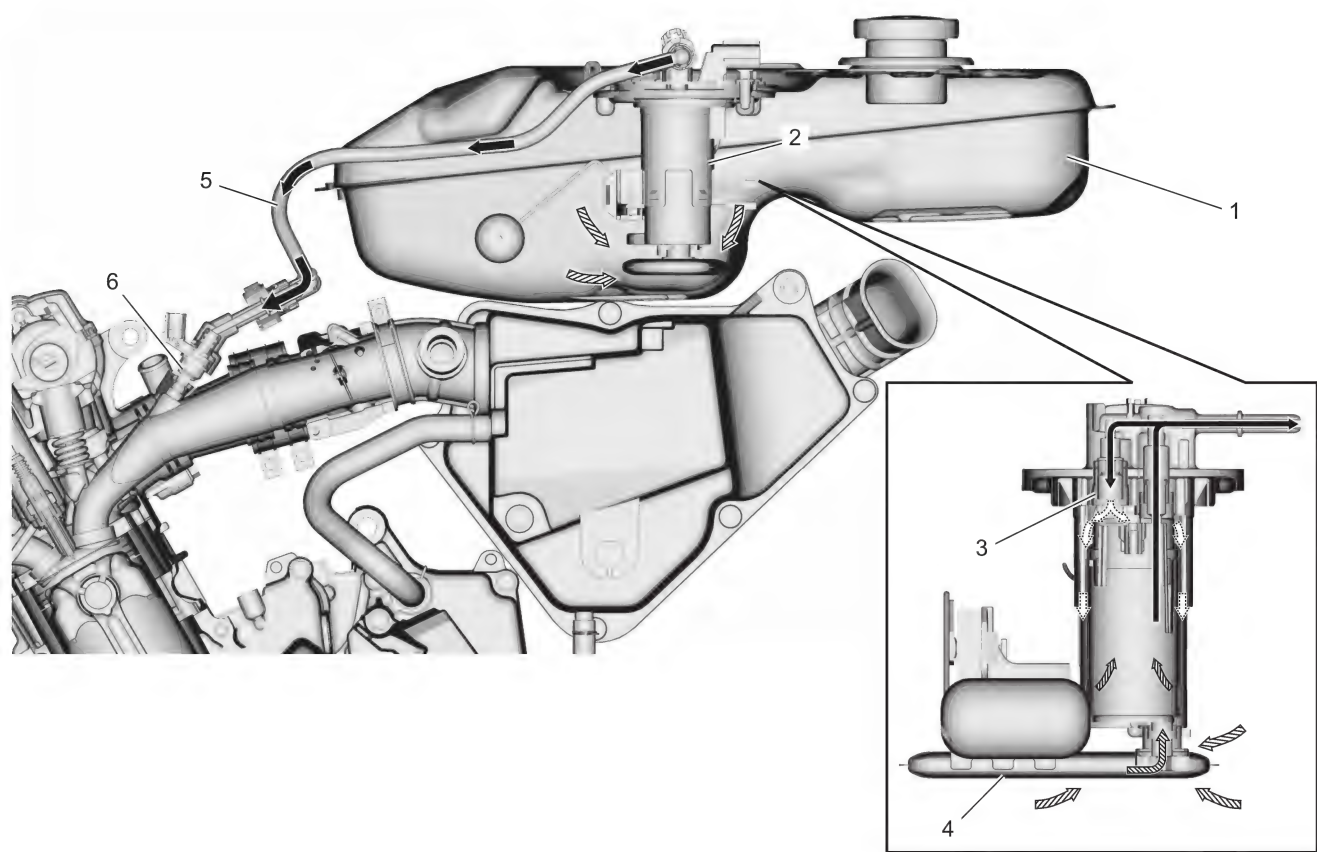
Refer to “General Precautions” in Section 00 (Page 00-1)

General Description

Fuel Injection System Description

BENH23K21201001

GSX 150 motorcycles are equipped with a fuel injection system for emission level control. This fuel injection system is precision designed, manufactured and adjusted to comply with the applicable emission limits. With varying engine conditions, all of the fuel injection volumes are precisely controlled by the programmed injection maps in the ECM to reduce CO, NOx and HC. Adjusting, interfering with, improper replacement, or resetting of any of the fuel injection components may adversely affect injection performance and cause the motorcycle to exceed the exhaust emission level limits.



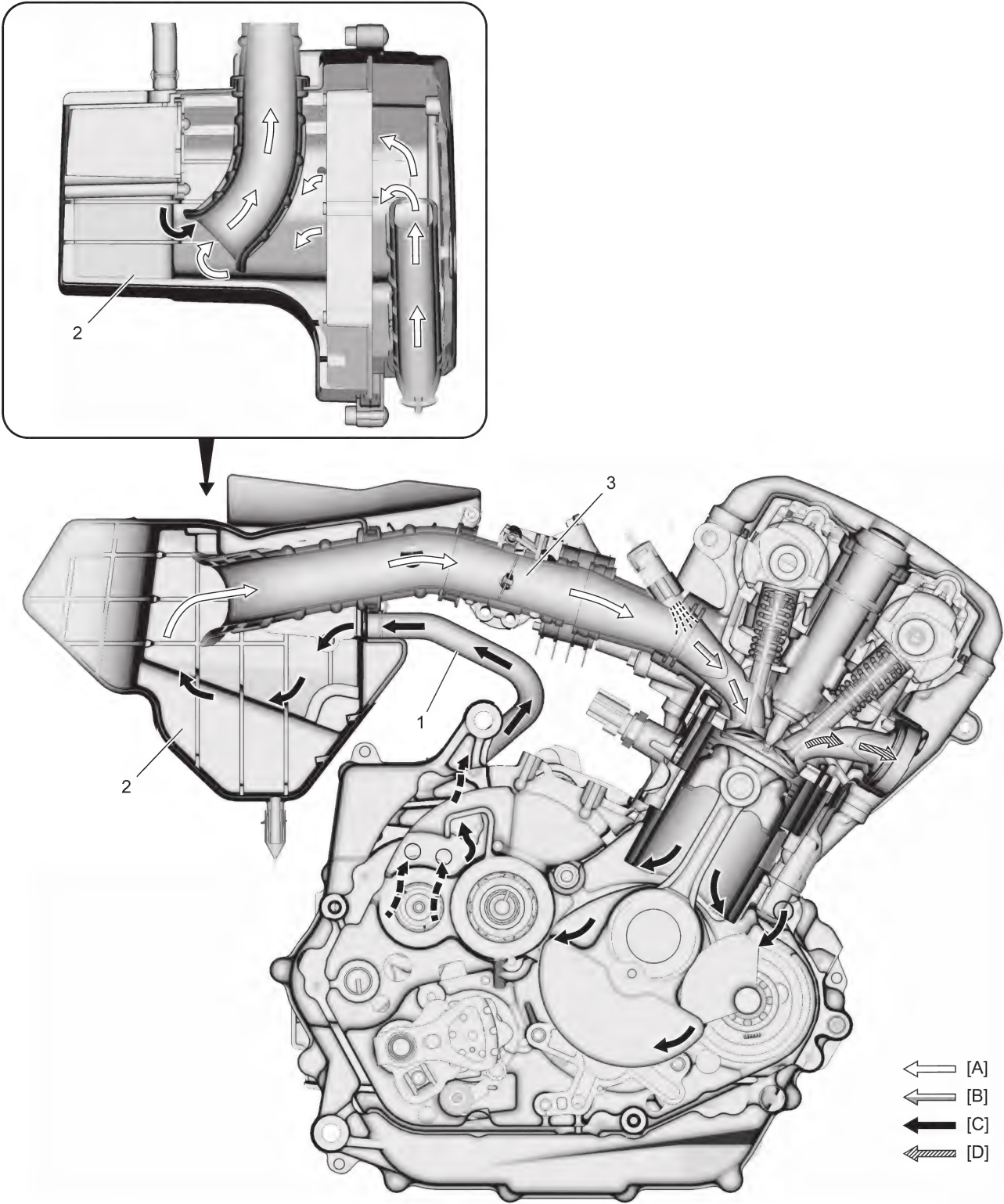
[A]
 [B]
 [C]
 IG12K1120004-01

[A]: Before-pressurized fuel	1. Fuel tank	4. Fuel mesh filter
[B]: Pressurized fuel	2. Fuel pump	5. Fuel feed hose
[C]: Relieved fuel	3. Fuel pressure regulator	6. Fuel injector

Crankcase Emission Control System Description

BENH23K21201002

The engine is equipped with a PCV system. Blow-by gas in the engine is constantly drawn into the crankcase, which is returned to the combustion chamber through the PCV (breather) hose (1), air cleaner (2) and throttle body (3).



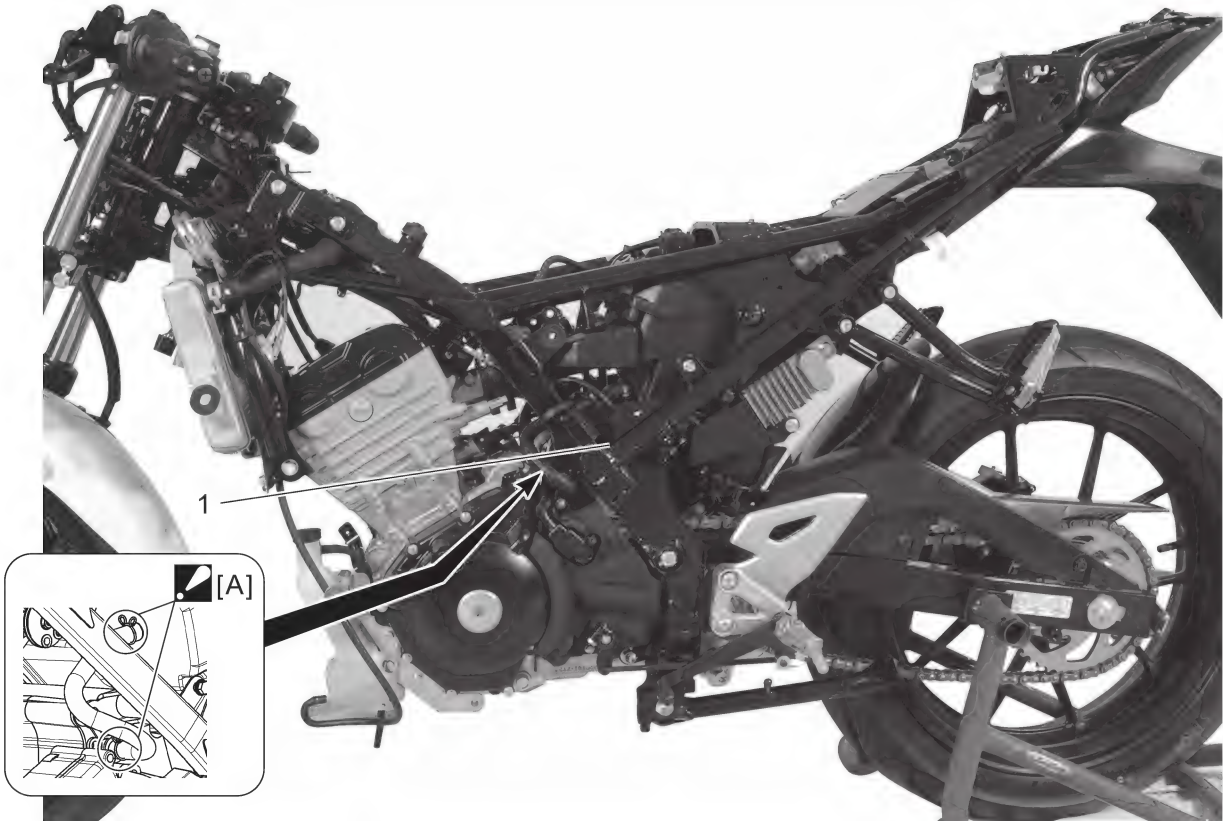
IG12K1120001-03

[A]: Fresh air	[B]: Fuel/Air mixture	[C]: Blow-by gas	[D]: Exhaust gas
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Schematic and Routing Diagram

PCV Hose Routing Diagram

BENH23K21202001



IH23K1120001-01

 [A]: Face the clamp end to upward	1. PCV hose
---	-------------

Repair Instructions

Cylinder Head Cover Inspection

BENH23K21206001

Refer to "Cylinder Head Cover Removal and Installation" in Section 1D (Page 1D-16)

Inspect the cylinder head cover in the carbon deposit. If the carbon deposit is found in the cylinder head cover, remove the carbon.

PCV Hose Inspection

BENH23K21206002

- 1) Remove the left under cowling. ☞ (Page 9D-25)
- 2) Inspect the PCV hose (1) for wear and damage. If it is worn or damaged, replace the PCV hose with a new one.
- 3) Check that the PCV hose is securely connected.



IH23K1120002-02

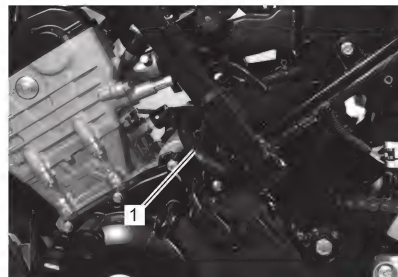
- 4) Install the removed parts.

PCV Hose Removal and Installation

BENH23K21206003

Removal

- 1) Remove the left under cowling. ☞ (Page 9D-25)
- 2) Disconnect the PCV hose (1).



IH23K1120002-02

Installation

- 1) Connect the PCV hose. Refer to "PCV Hose Routing Diagram" (Page 1B-3).
- 2) Install the removed parts.

Engine Electrical Devices

Precautions


Precautions for Engine Electrical Device

BENH23K21300001

Refer to "General Precautions" in Section 00 (Page 00-1), "Precautions for Electrical Circuit Service" in Section 00 (Page 00-2) and "Precautions for Circuit Tester" in Section 00 (Page 00-7).

Precautions for Replacing Remote Controller

BENH23K21300002

Remote controller incorporates the secret code. Therefore, register the secret code when remote controller is replaced or added.  (Page 1C-12)

Precautions for Replacing Keyless Control Unit

BENH23K21300003

When the Keyless Control Unit is to be replaced, at the same time, replace the ECM. If not replaced at the same time, the ECM and Keyless Control Unit ID Numbers cannot be compared, thus the engine will not start.

Precautions for Remote Controller Disposal

BENH23K21300004

- To prevent theft, break remote controller before disposing of it.
- Dispose of the used battery properly according to applicable rules or regulations. Do not dispose of lithium batteries with ordinary household trash.

Component Location

Engine Electrical Components Location

BENH23K21303001

Refer to "Electrical Components Location" in Section 0A (Page 0A-5).

Diagnostic Information and Procedures

Engine Symptom Diagnosis

BENH23K21304001

Refer to "Engine Symptom Diagnosis" in Section 1A (Page 1A-12).

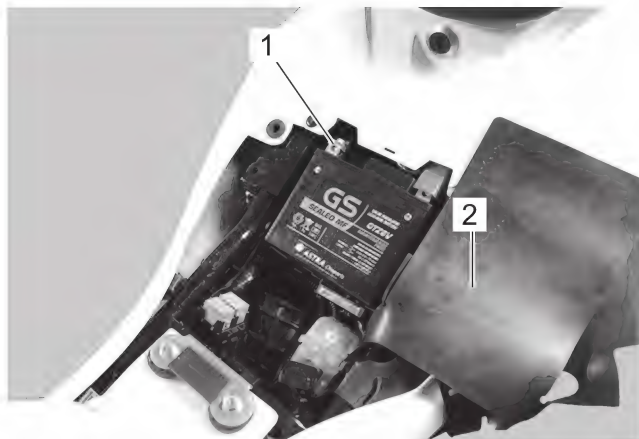
Repair Instructions

ECM Removal and Installation

BENH23K21306001

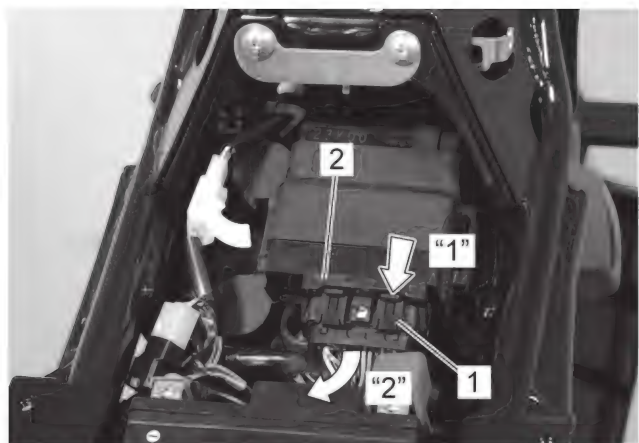
Removal

- 1) Disconnect the battery (–) lead wire (1). Refer to “Battery Removal and Installation” in Section 1J (Page 1J-11).
- 2) Remove the battery cover(2).



IH23K1130002-01

- 3) Disconnect the ECM connector as follows:
 - a) Push the lock claw (1) in arrow direction “1”.
 - b) Turn the lock lever (2) in arrow direction “2” until it stops. Then, disconnect the connector from the ECM.



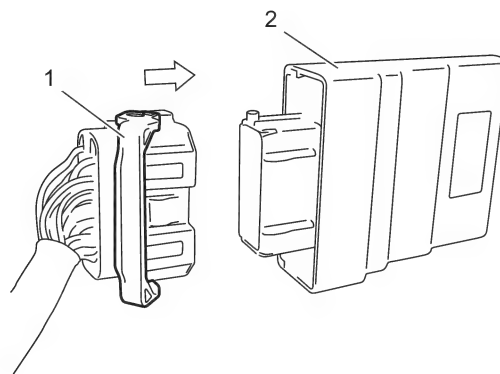
IH23K1130003-02

- 4) Remove the ECM.

Installation

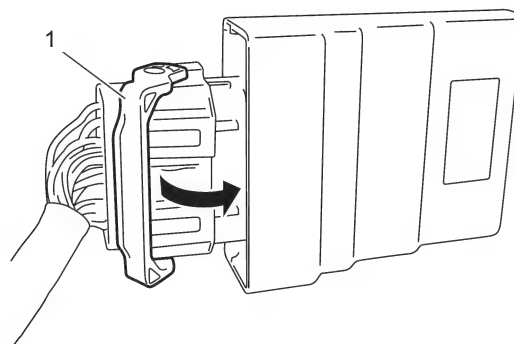
Install the ECM in reverse order of removal. Pay attention to the following point:

- Connect ECM coupler to ECM as follows:
 - a. Insert ECM coupler (1) to ECM (2) until it stops.



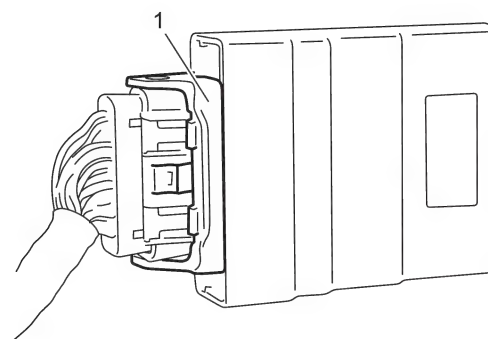
IG12K1130002-01

- b. Turn the lock lever (1) to lock ECM coupler securely.



IG12K1130003-02

- c. Check that lock lever (1) is in locked position.



IG12K1130004-01

IAP/TP/IAT Sensor Inspection

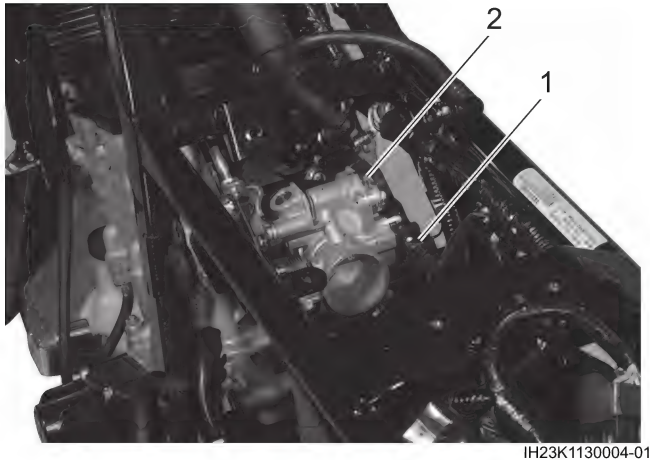
BENH23K21306002

NOTICE

Do not remove IAP/TP/IAT sensor (1) and ISC sensor (2) from throttle body. It is available only as a throttle body assembly.

NOTE

The IAP sensor, TP sensor, and IAT sensor are combined into one and installed in the throttle body.



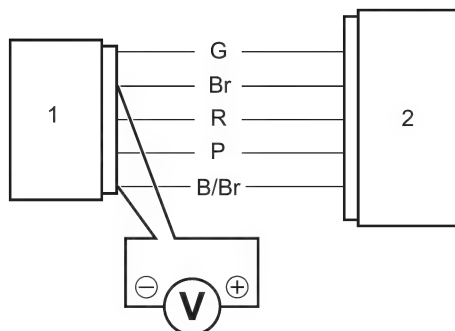
IH23K1130004-01

IAP Sensor

- 1) Check the IAP/TP/IAT sensor power supply voltage. (Page 1A-23)
- 2) Turn the ignition switch OFF.
- 3) Insert the needle pointed probes to the lead wire coupler.
- 4) Start the engine and at idle speed, measure the IAP sensor output voltage between the Br wire and B/Br wire. If the voltage is not within the specified value, replace the throttle body assembly. (Page 1D-13)

IAP sensor output voltage

At 1 atm. [Standard]: 3.88 – 4.12 V



IG12K1130006-01

1. IAP/TP/IAT sensor

2. ECM

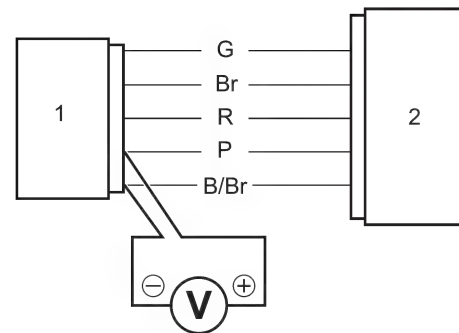
TP Sensor

- 1) Check that the throttle cable play is within the specification. (Page 1D-12)
- 2) Check the IAP/TP/IAT/ISC sensor power supply voltage. (Page 1A-25)
- 3) Turn the ignition switch OFF.
- 4) Insert the needle pointed probes to the lead wire coupler and turn the ignition switch ON.
- 5) Measure the voltage between the P wire and B/Br wire by turning the throttle grip open and close. If the voltage is not within the specified value, replace the throttle body assembly. (Page 1D-13)

TP sensor output voltage

Closed [Standard]: 0.65 – 0.75 V

Opened [Standard]: 3.80 – 4.00 V



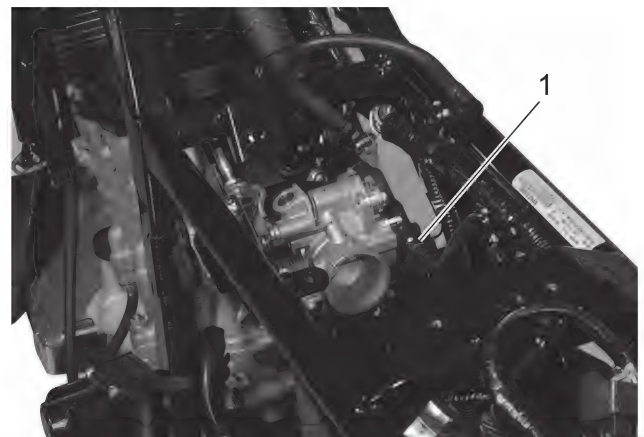
IG12K1130007-01

1. IAP/TP/IAT/ISC sensor

2. ECM

IAT Sensor Resistance

- 1) Disconnect the IAP/TP/IAT sensor coupler (1).



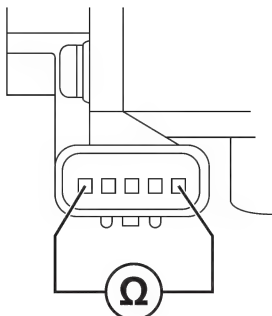
IH23K1130019-01

1C-4 Engine Electrical Devices:

- 2) Measure the IAT sensor resistance between the terminals of the IAP/TP/IAT sensor. If the resistance is out of the specified value, replace the throttle body assembly. (Page 1D-13)

IAT sensor resistance

23 °C (73.4 °F) [Standard]: 2.169 – 2.557 Ω



IF42J1130009-01

TP Fully Closed Learned Value Reset

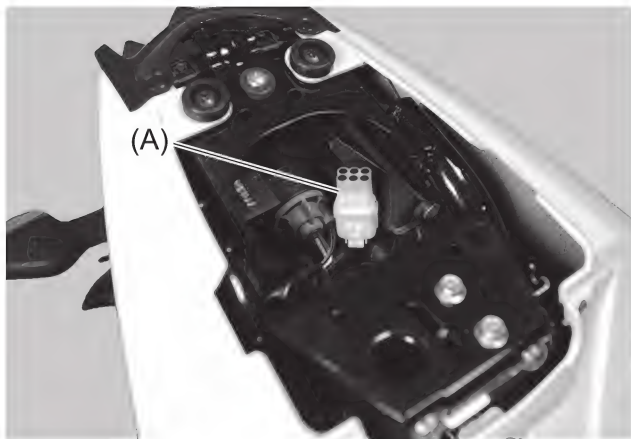
BENH23K21306003

When replacing the throttle body assembly or IAP/TP/IAT/ISC sensor with a new one, reset the TP fully closed learned value in the following procedures:

- 1) Open the passenger seat.
- 2) Connect the special tool to the mode select coupler (2P) at the wiring harness.

Special tool

(A): 09930-82760



IH23K1130005-01

- 3) Turn the special tool's switch ON.

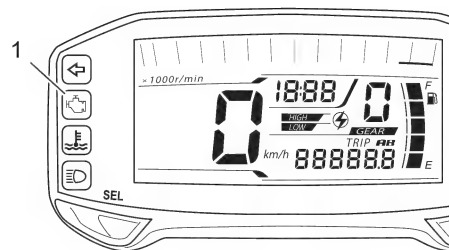


ID26J1110213-01

- 4) Turn the ignition switch ON.
- 5) After the MIL (1) turns OFF, open the throttle grip fully.

NOTE

When the ignition switch is turned ON, MIL is lit for 3 seconds and thereafter remains unlit.



IG12K1110011-01

- 6) Then, MIL turns ON for 2 seconds automatically.

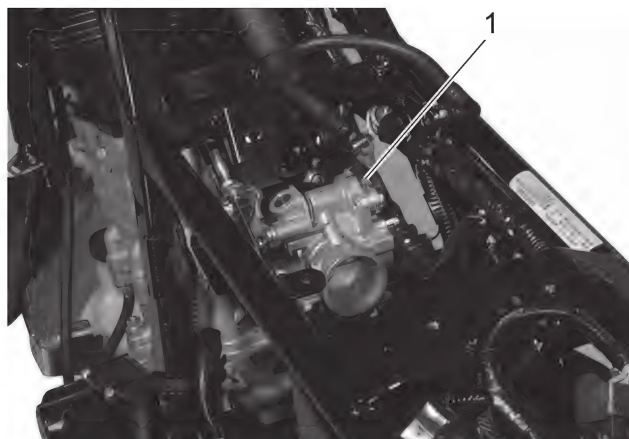
NOTE

The learned value of throttle valve closing is set at preset position.

ISC Valve Inspection

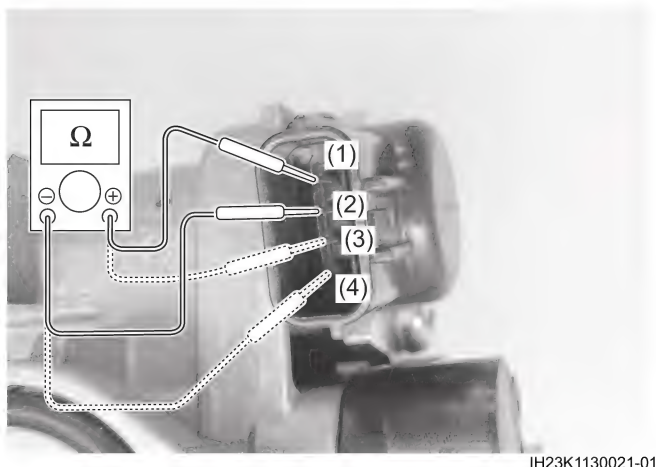
BENH23K21306004

- 1) Disconnect the ISC sensor coupler (1).



IH23K1130020-03

- 2) Measure the resistance between the B/G wire terminal (1) and B/Lg wire terminal (2), and between the Lbl wire terminal (3) and Y/R wire terminal (4). If the resistance is out of the specified value, replace the ISC valve. (Page 1D-13)



IH23K1130021-01

ISC valve resistance

20 °C (68 °F) [Standard]: Approx. 20 Ω

ISC Valve Removal and Installation

BENH23K21306005

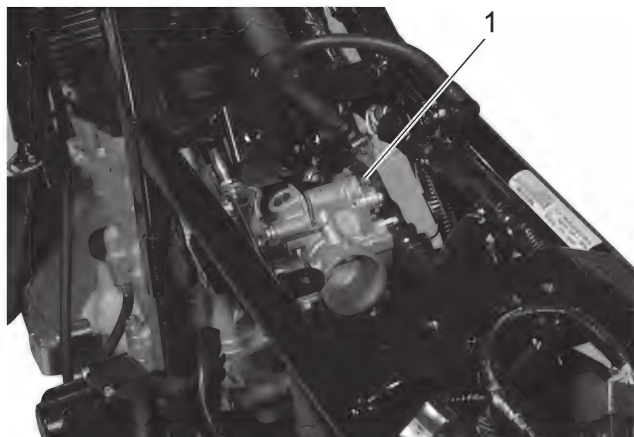
Refer to "Air Cleaner Box Removal and Installation" in Section 1D (Page 1D-9).

Removal

NOTICE

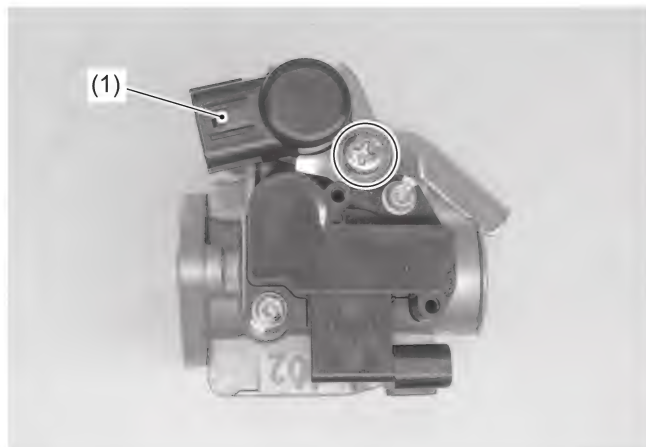
Be careful not to disconnect the ISC valve coupler at least 5 second after ignition switch turned to OFF. If the ECM coupler or ISC valve coupler is disconnected within 5 second after ignition switch is turned to OFF, there is a possibility of an unusual valve position being written in ECM and causing an error of ISC valve operation.

- 1) Disconnect ISC valve coupler (1).



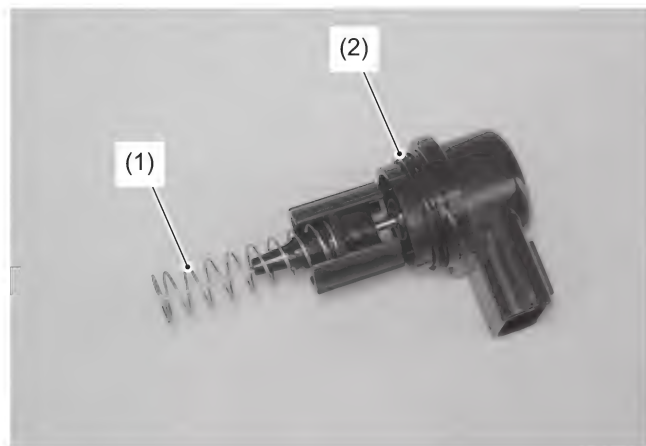
IH23K1130020-03

- 2) Remove the ISC valve (1).



IH23K1130022-01

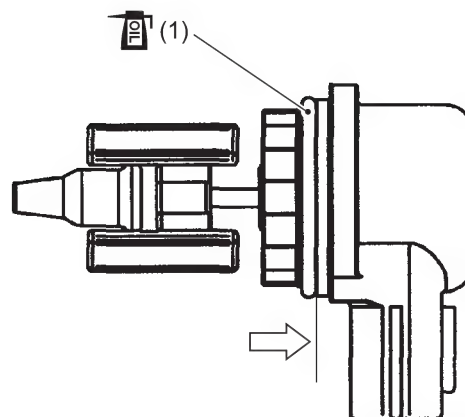
- 3) Remove the spring (1) and O-ring (2).



IH23K1130026-01

Installation

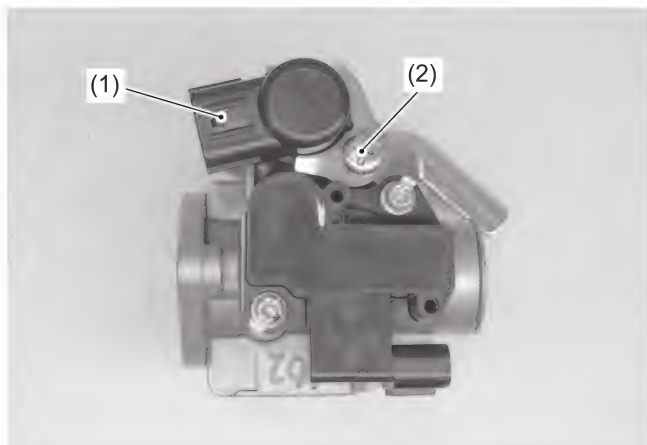
- 1) Apply a thin coat of engine oil to the new O-ring (1) and install it.



IH23K1130027-01

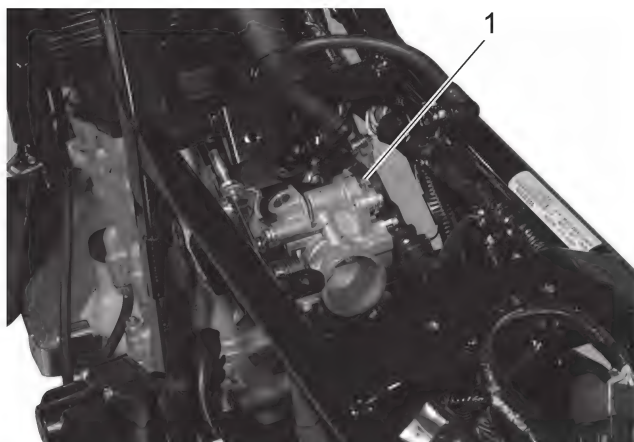
1C-6 Engine Electrical Devices:

- 2) Install the ISC valve (1) to the throttle body and tighten the ISC valve mounting screw (2).



IH23K1130028-01

- 3) Connect the ISC valve coupler (1).



IH23K1130020-03

- 4) After installing the removed parts, reset ISC aperture learned value.

NOTICE

Do not blow ISC valve with compressed air.
Do not clean ISC valve with high pressure cleaner or carburetor cleaner.

Use dry cloth for clean the ISC valve (1).

NOTICE

Please keep ISC valve length as per specification after removal.

ISC valve length has change position or not in specification can possibility of an unusual valve position being written in ECM and causing an error of ISC valve operation.

ECT Sensor Inspection

BENH23K21306006

Refer to "ECT Sensor Removal and Installation" (Page 1C-7).

Measure the resistance between terminals of the ECT sensor (1) depending on coolant temperature as shown in the following graph. If measured resistance does not change as specified, replace ECT sensor with a new one.

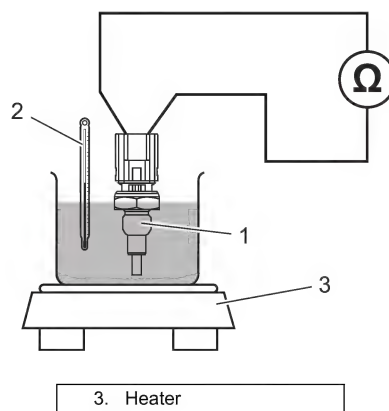
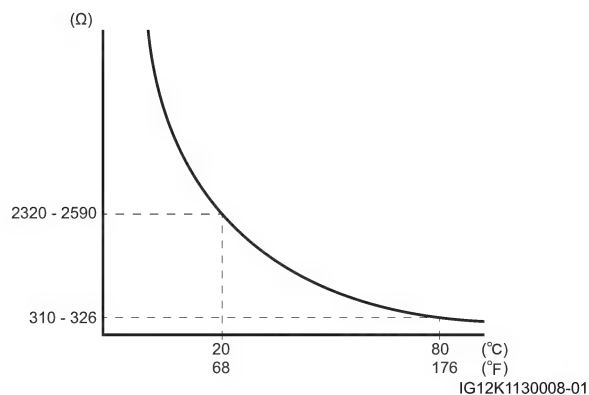
NOTICE

- Handle the ECT sensor carefully as it will easily be broken if it receives excessive shock or forces.
- Keep the ECT sensor and thermometer (2) away from the heater's water container.

ECT sensor resistance

20 °C (68 °F) [Standard]: 2320 – 2590 Ω

80 °C (176 °F) [Standard]: 310 – 326 Ω



ECT Sensor Removal and Installation

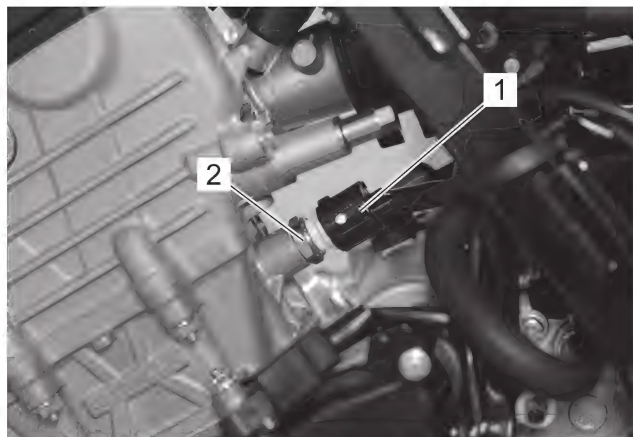
BENH23K21306007

Removal

- 1) Drain engine coolant. Refer to "Engine Coolant Replacement" in Section 1F (Page 1F-5).
- 2) Disconnect the ECT sensor coupler (1) and remove the ECT sensor (2).

NOTICE

Take special care when handling the ECT sensor. It may cause damage if it gets an excessive impact.



IH23K1130006-01

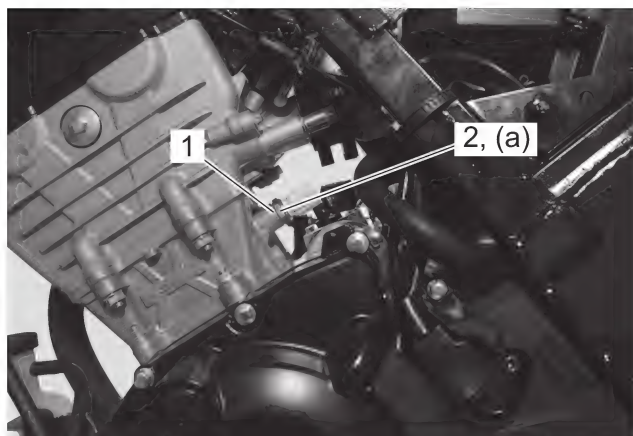
Installation

Install ECT sensor in reverse order of removal. Pay attention to the following point:

- Install a new gasket (1) and tighten ECT sensor (2) to specified torque.

Tightening torque

ECT sensor (a): 23.5 N·m (2.39 kgf-m, 17.3 lbf-ft)

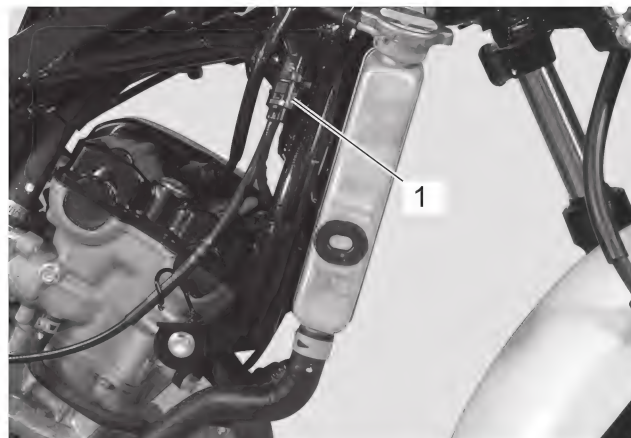


IH23K1130007-01

O2 Sensor Inspection

BENH23K21306008

- 1) Remove right front fairing. (Page 9D-22)
- 2) Start the engine and warm up the engine enough.
- 3) Disconnect the O2 sensor lead wire coupler (1).

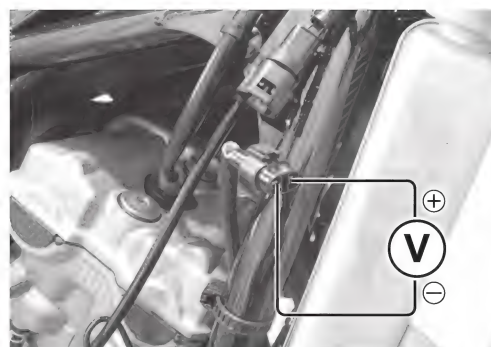


IH23K1130008-01

- 4) Measure the O2 sensor output voltage between the BI wire and W wire, at idle.

O2 sensor output voltage

Idle speed [Standard]: 0.3 – 1.2 V



IG12K1130013-02

- 5) If the O2 sensor output voltage is not within standard range, replace O2 sensor with a new one. (Page 1C-8)
- 6) Install the removed parts.

O2 Sensor Removal and Installation

BENH23K21306009

⚠ WARNING

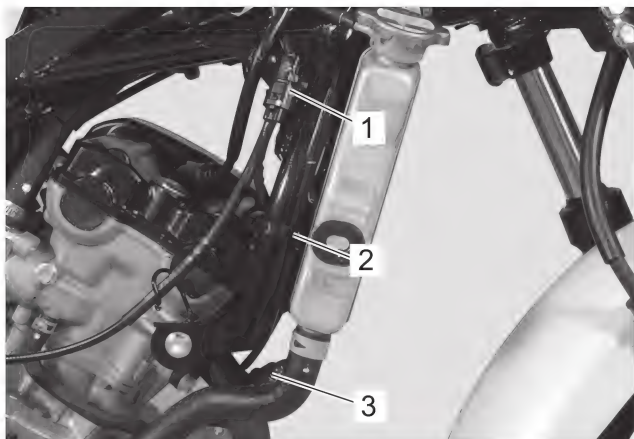
Do not remove the O2 sensor while it is hot.

NOTICE

- Be careful not to expose the O2 sensor to excessive shock.
- Do not use an impact wrench when removing or installing the O2 sensor.
- Be careful not to twist or damage the sensor lead wire.

Removal

- 1) Remove right front fairing. ☞ (Page 9D-22)
- 2) Disconnect O2 sensor lead wire coupler (1) and harness clamp (2).
- 3) Remove O2 sensor (3).



IH23K1130010-01

Installation

Install O2 sensor in reverse order of removal.

Pay attention to the following points:

- Apply nickel based anti seize to thread part of O2 sensor.
- Tighten O2 sensor to specified torque.

Tightening torque

O2 sensor (a): 25 N·m (2.5 kgf-m, 18.5 lbf-ft)



IH23K1130011-01

CKP Sensor Inspection

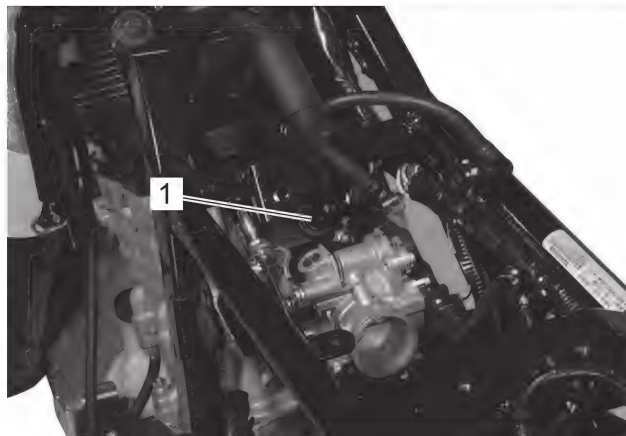
BENH23K21306010

CKP Sensor Peak Voltage

NOTE

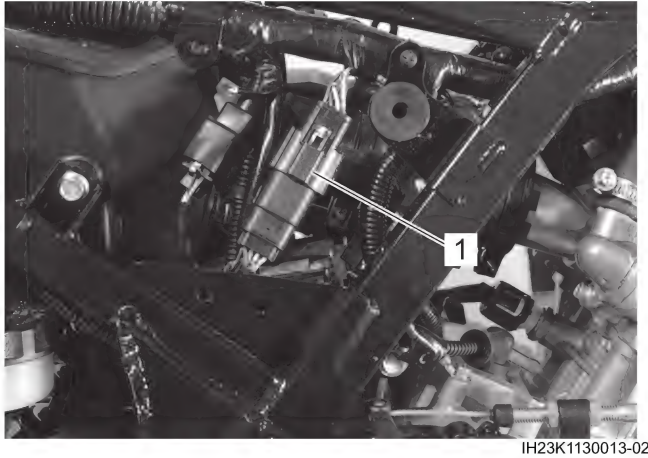
Be sure that all couplers are connected properly and the battery used is in fully-charged condition.

- 1) Remove following parts.
 - a) Under cowling: ☞ (Page 9D-25)
 - b) Front box: ☞ (Page 9D-28)
- 2) Disconnect injector coupler (1) to stop the fuel injection.



IH23K1130012-01

- 3) Disconnect CKP sensor lead wire coupler (1).

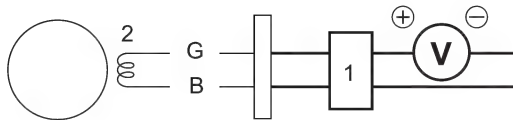


IH23K1130013-02

- 4) Connect multi circuit tester with peak voltage adapter (1) as follows.

CKP sensor – circuit tester connection

	(+) Probe	(-) Probe
CKP sensor (2)	G lead wire	B lead wire



IG12K1130018-01

- 5) Measure CKP sensor peak voltage using the following procedures:
 - a) Turn the ignition switch ON.
 - b) Grasp the front or rear brake lever.
 - c) Press the starter switch and allow the engine to crank for a few seconds, and then measure the CKP sensor peak voltage.
- 6) Repeat c) procedure several times and measure the highest peak voltage.
If the voltage is lower than standard range, inspect for coupler connection and metal particles or foreign material being stuck on CKP sensor and generator rotor.
If the peak voltage is within the standard range, check the continuity between the CKP sensor lead wire coupler and ECM coupler.

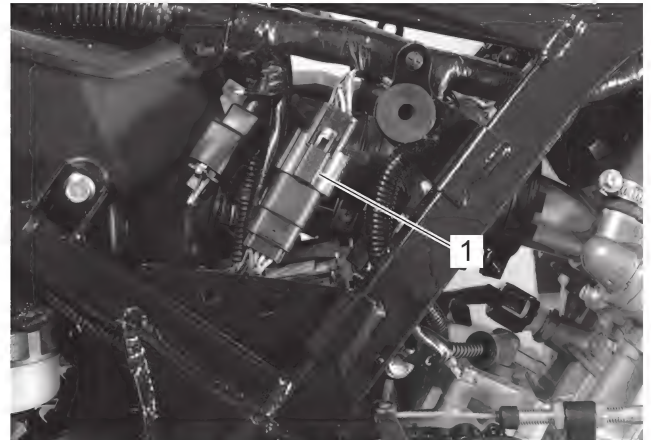
CKP sensor peak voltage

When cranking [Standard]: 2.0 V or more

- 7) After measuring CKP sensor peak voltage, connect CKP sensor lead wire coupler and injector coupler.
- 8) Install the removed parts.

CKP Sensor Resistance

- 1) Open the front box lid.
- 2) Remove the right under cowling. (Page 9D-25)
- 3) Disconnect the CKP sensor lead wire coupler (1).

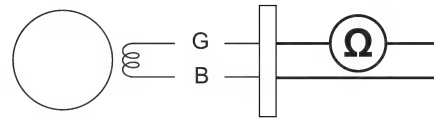


IH23K1130013-02

- 4) Measure the resistance between the lead wire and ground. If the resistance is not within the standard range, replace the CKP sensor with a new one. Refer to "Generator Removal" in Section 1J (Page 1J-5).

CKP sensor resistance

20 °C (68 °F) [Standard]: Approx. 230 Ω



IG12K1130019-01

- 5) After measuring the CKP sensor resistance, connect the CKP sensor coupler.
- 6) Install the removed parts.

CKP Sensor Removal and Installation

BENH23K21306011

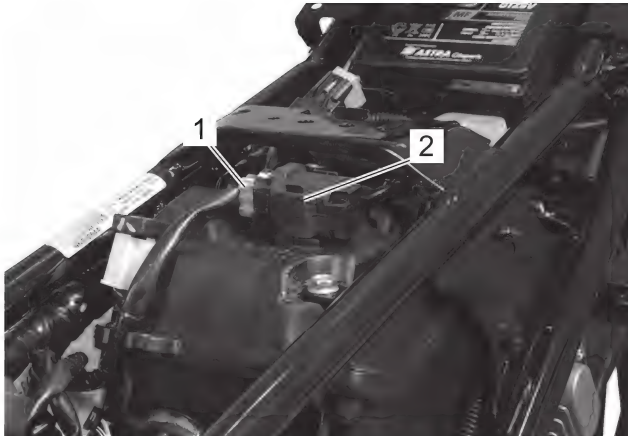
Refer to "Generator Removal" in Section 1J (Page 1J-5).

TO Sensor Removal and Installation

BENH23K21306012

Removal

- 1) Remove the fuel tank. (Page 1G-9)
- 2) Disconnect the coupler (1) and remove the TO sensor (2).

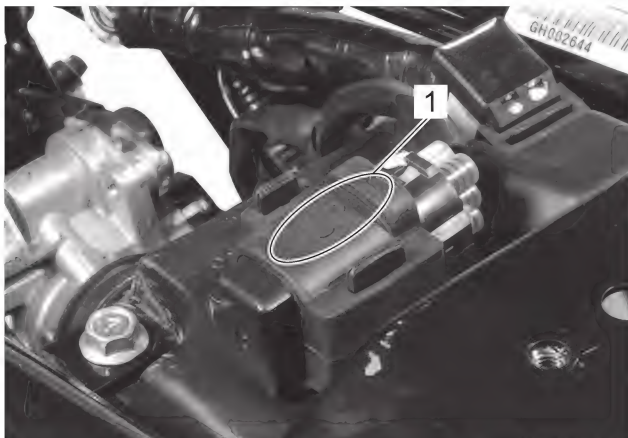


IH23K1130014-01

Installation

Install TO sensor in reverse order of removal.
Pay attention to the following point:

- When installing the TO sensor, bring the “UPPER” letters (1) upward.



IH23K1130015-01

TO Sensor Inspection

BENH23K21306013

Refer to “TO Sensor Removal and Installation” (Page 1C-10).

TO Sensor Output Voltage

- 1) Check TO sensor power supply voltage and circuit.
- 2) Turn the ignition switch OFF and connect the ECM coupler.
- 3) Dismount the TO sensor from its bracket and connect the TO sensor coupler.
- 4) Insert the needle point probes to the lead wire coupler.
- 5) Turn the ignition switch ON, measure the TO sensor output voltage between the Br wire and B/Br wire.

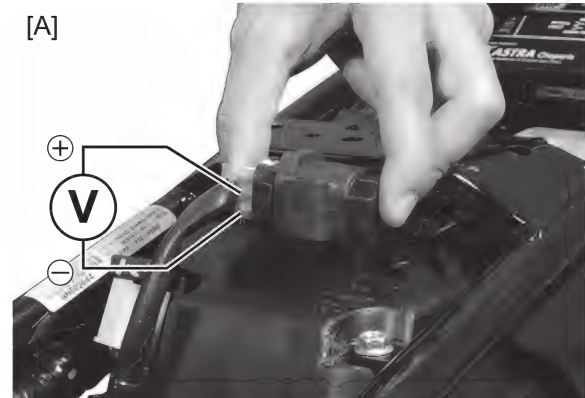
If the voltage is not within the specified value, replace the TO sensor. (Page 1C-10)

TO sensor output voltage

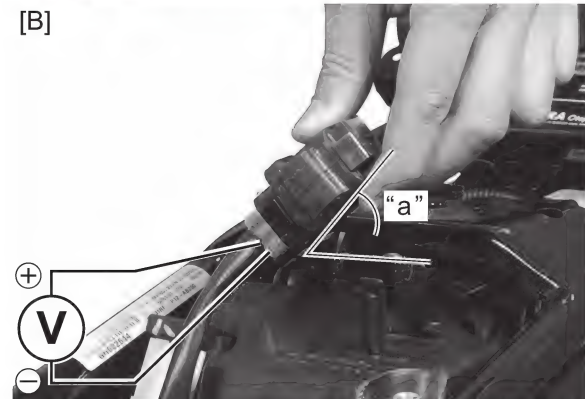
Normal [Standard]: 0.4 – 1.4 V

Leaning 65° [Standard]: 3.7 – 4.4 V

[A]



[B]



IH23K1130016-01

[A]: When sensor is horizontal (normal) level.

[B]: When sensor is leaned 65° “a” or more, left and right, from horizontal level.

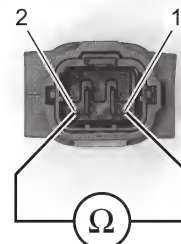
- 6) After finishing the TO sensor inspection, install removed parts.

TO Sensor Resistance

- 1) Measure the resistance between R wire terminal (1) and B/Br wire terminal (2). If the resistance is out of the specified value, replace the TO sensor.

TO sensor resistance

[Standard]: 19313 – 19507 Ω



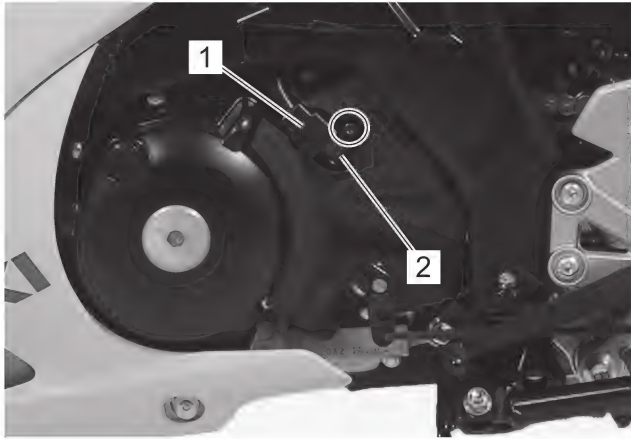
IF04K1130039-02

Speed Sensor Removal and Installation

BENH23K21306014

Removal

- 1) Remove speed sensor (1), and then disconnect the speed sensor coupler (2).



IH23K1130017-01

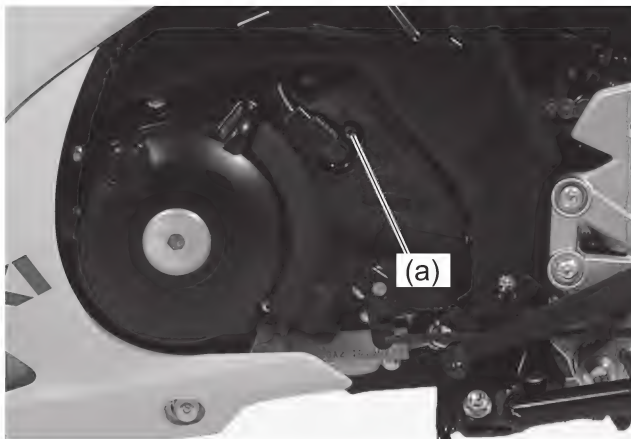
Installation

Install speed sensor in reverse order of removal.
Pay attention to following point:

- Tighten the speed sensor bolt to the specified torque.

Tightening torque

Speed sensor bolt (a): 4.5 N·m (0.46 kgf-m, 3.35 lbf-ft)



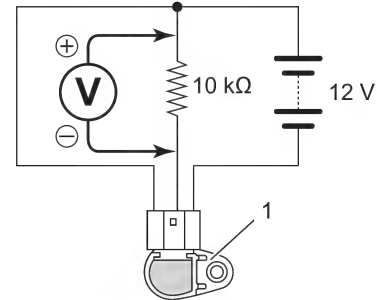
IH23K1130018-01

Speed Sensor Inspection

BENH23K21306015

Refer to "Speed Sensor Removal and Installation" (Page 1C-11).

- 1) Connect a 12 V battery, 10 kΩ resistor and multi circuit tester to the speed sensor (1) as shown in the figure.

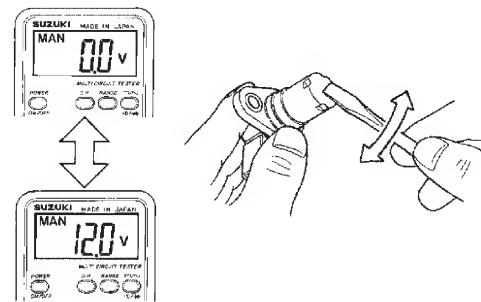


IG12K1130026-02

- 2) Move a screwdriver back and forth across the pickup surface of the speed sensor. The voltage readings should cycle as follows (0 V → 12 V or 12 V → 0 V). If the voltage reading does not change, replace the speed sensor with a new one.

NOTE

While testing, the highest voltage reading should be the same as the battery voltage (12 V).



ID26J1110254-01

Remote Controller Registration

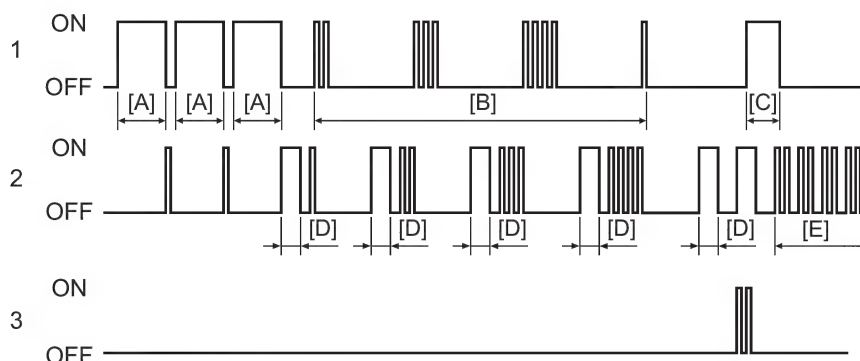
BENH23K21306016

NOTICE

- Up to 6 remote controllers can be registered. Once 6 remote controllers have been registered, no further unit can be added.
- In order to register any additional remote controller after 6 units have been registered, it is necessary to replace the Keyless Control Unit and ECM at the same time.
- By using the secret code written on the inside of the remote controller, up to 6 secret codes can be stored in the keyless control unit.
- Secret codes can be changed to any 4-digit figure as the user likes. However, once any of the secret codes is changed, for the remote controllers already added, and remote controllers that have been registered additionally, the secret codes written on the inside of such remote controllers, will be rendered invalid.
- If the keyless control unit or ECM is replaced, register all of the remote controllers.
- If all of remote controllers are lost, the secret code stored in the keyless control unit can be used to register remote controllers.

Check the Number of Registered Remote Controllers

- 1) Place all the registered remote controllers outside the operating range.
- 2) Push the request switch until the keyless indicator light is turned on.
- 3) When the keyless indicator light is turned on momentarily, release the request switch.
- 4) Within 3 seconds, push the request switch until the keyless indicator light is turned on.
- 5) When the keyless indicator light is turned on momentarily, release the request switch.
- 6) Within 3 seconds, push the request switch until the keyless indicator light is turned on.
- 7) After the keyless indicator light is turned on for 3 seconds, it blinks once.
- 8) Push the request switch the number of times corresponding to the 1st digit in the secret code.
- 9) 5 seconds later, after the keyless indicator light is turned on for 2 seconds and then blinks 2 times.
- 10) Push the request switch the number of times corresponding to the 2nd digit in the secret code.
- 11) 5 seconds later, after the keyless indicator light is turned on for 2 seconds and then blinks 3 times.
- 12) Push the request switch the number of times corresponding to the 3rd digit in the secret code.
- 13) 5 seconds later, after the keyless indicator light is turned on for 2 seconds and then blinks 4 times.
- 14) Push the request switch the number of times corresponding to the 4th digit in the secret code.
- 15) 5 seconds later, the keyless indicator light is turned on for 2 seconds, the hazard light blinks 2 times, and then the keyless indicator light blinks again.
- 16) Push the request switch until the keyless indicator light goes off temporarily and then is turned on again.
- 17) The keyless indicator quickly blinks the number of times corresponding to the number of the registered remote controllers, and then is turned OFF for 1 second. This blinking repeats for 10 seconds.

Check the number of registered remote controllers procedure (In case of secret code 2341)

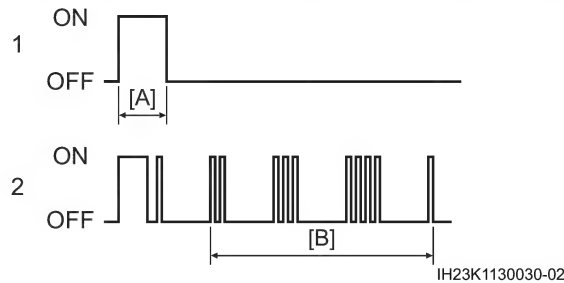
IH23K1130029-02

[A]: About 5 seconds	[D]: 2 seconds	2. Keyless indicator light
[B]: Input the secret code	[E]: Blinks the number of times remote controllers registered	3. Hazard light
[C]: About 3 seconds	1. Request switch	

Remote Controller Secret Code Confirmation

- 1) Set the remote controller already registered to the communication mode and place them within the operating range.
- 2) Push the request switch until the keyless indicator light goes off temporarily and then is turned on again.
- 3) The keyless indicator blinks the secret code stored in the keyless control unit.

Remote control secret code confirmation procedure (In case of secret code 2341)

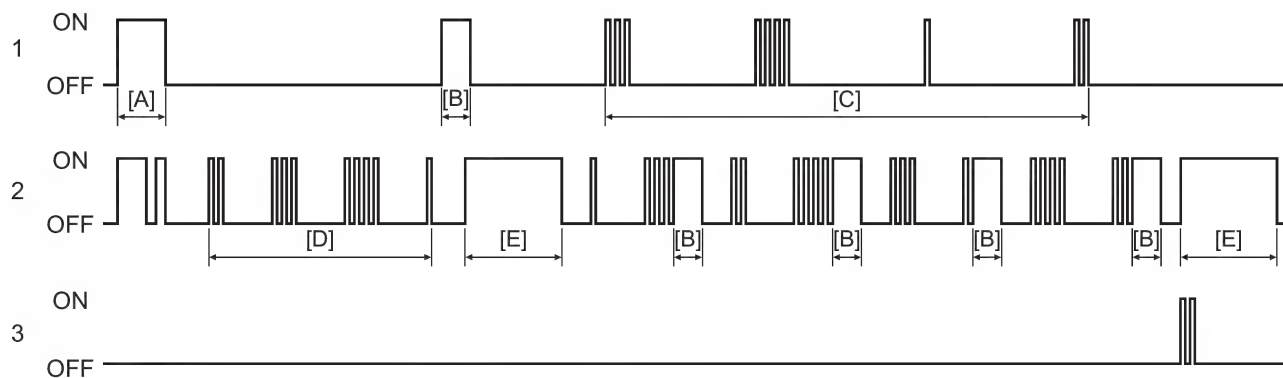


[A]: About 5 seconds	1. Request switch
[B]: Blink the secret code	2. Keyless indicator light

Remote Controller Secret Code Change

- 1) Set the remote controller to the communication mode and place them in the operating range.
- 2) Push the request switch until the keyless indicator light goes off temporarily and then is turned on again.
- 3) The keyless indicator blinks the secret code stored in the keyless control unit.
- 4) Immediately after the secret code blinks, press the request switch.
- 5) When the keyless indicator light is turned on, release the request switch.
- 6) Within 5 seconds after the keyless indicator light is turned on for 10 seconds and then blinks once, push the request switch the number of times corresponding to the value of the 1st digit in the new secret code.
- 7) The keyless indicator blinks the number of times corresponding to the 1st digit in the new secret code, and then is turned on for 3 seconds.
- 8) Within 5 seconds after the keyless indicator blinks 2 times, push the request switch the number of times corresponding to the 2nd digit in the new secret code.
- 9) The keyless indicator blinks the number of times corresponding to the 2nd digit in the new secret code, and then is turned on for 3 seconds.
- 10) Within 5 seconds after the keyless indicator blinks 3 times, push the request switch the number of times corresponding to the 3rd digit in the new secret code.
- 11) The keyless indicator blinks the number of times corresponding to the 3rd digit in the new secret code, and then is turned on for 3 seconds.
- 12) Within 5 seconds after the keyless indicator blinks 4 times, push the request switch the number of times corresponding to the 4th digit in the new secret code.
- 13) The keyless indicator blinks the number of times corresponding to the 4th digit in the new secret code, and then turn on for 3 seconds.
- 14) The keyless indicator light is turned on for 10 seconds, the hazard light blinks 2 times, and the secret code change operation is completed.

Secret code change procedure (In case of secret code 2341 to 3412)



IH23K1130031-02

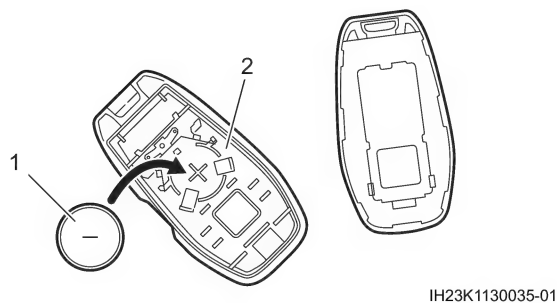
[A]: About 5 seconds	[D]: Blink the current secret code	2. Keyless indicator light
[B]: 3 seconds	[E]: 10 seconds	3. Hazard light
[C]: Input the new secret code	1. Request switch	

Remote Controller Registration

- 1) Place all the registered remote controllers outside the operating range.
- 2) Push the request switch until the keyless indicator light is turned on.
- 3) When the keyless indicator light is turned on momentarily, release the request switch.
- 4) Within 3 seconds, push the request switch until the keyless indicator light is turned on.
- 5) When the keyless indicator light is turned on momentarily, release the request switch.
- 6) Within 3 seconds, push the request switch until the keyless indicator light is turned on.
- 7) After the keyless indicator light is turned on for 3 seconds, it blinks once.
- 8) Push the request switch the number of times corresponding to the 1st digit in the secret code.
- 9) 5 seconds later, after the keyless indicator light is turned on for 2 seconds and then blinks 2 times.
- 10) Push the request switch the number of times corresponding to the 2nd digit in the secret code.
- 11) 5 seconds later, after the keyless indicator light is turned on for 2 seconds and then blinks 3 times.
- 12) Push the request switch the number of times corresponding to the 3rd digit in the secret code.
- 13) 5 seconds later, after the keyless indicator light is turned on for 2 seconds and then blinks 4 times.
- 14) Push the request switch the number of times corresponding to the 4th digit in the secret code.
- 15) 5 seconds later, the keyless indicator light is turned on for 2 seconds, the hazard light blinks 2 times, and then the keyless indicator light is turned on again.
- 16) Within 10 seconds, push the request switch until the keyless indicator light is turned on.
- 17) The keyless indicator light blinks the number of times corresponding to the number of the currently registered remote controller. (Maximum of 10 seconds)
- 18) When the remote controller to be registered is placed within operating range and the switch is pushed briefly, the keyless indicator light is turned on, and remote controller registration completes.

1C-16 Engine Electrical Devices:

3) Place battery (lithium disc-type CR 2032) (1) so its “+” terminal faces “+” mark of the lower case (2).



4) Fit the upper case to lower case securely.

NOTE

- Insert the battery all the way into the lower case.
- Do not touch any electrical components of the remote controller.
- Be careful not to get any oil or foreign material on the remote controller or battery.
- Do not replace the battery with wet hands.
- Dispose of the used battery properly according to applicable rules or regulations. Do not dispose of lithium batteries with ordinary household trash.

Specifications

Tightening Torque Specifications

BENH23K21307001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
ECT sensor	23.5	2.39	17.3	☞ (Page 1C-7)
O2 sensor	25	2.5	18.5	☞ (Page 1C-8)
Speed sensor bolt	4.5	0.46	3.35	☞ (Page 1C-11)

Reference:

For the tightening torques of fasteners not specified in this page, refer to: “Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Special Tool

BENH23K21308001

09930–82760 Mode selection switch ☞ (Page 1C-4)		
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Engine Mechanical

Precautions

Precautions for Engine Mechanical

Refer to “General Precautions” in Section 00 (Page 00-1) and “Precautions for Electrical Circuit Service” in Section 00 (Page 00-2).

BENH23K21400001

NOTE

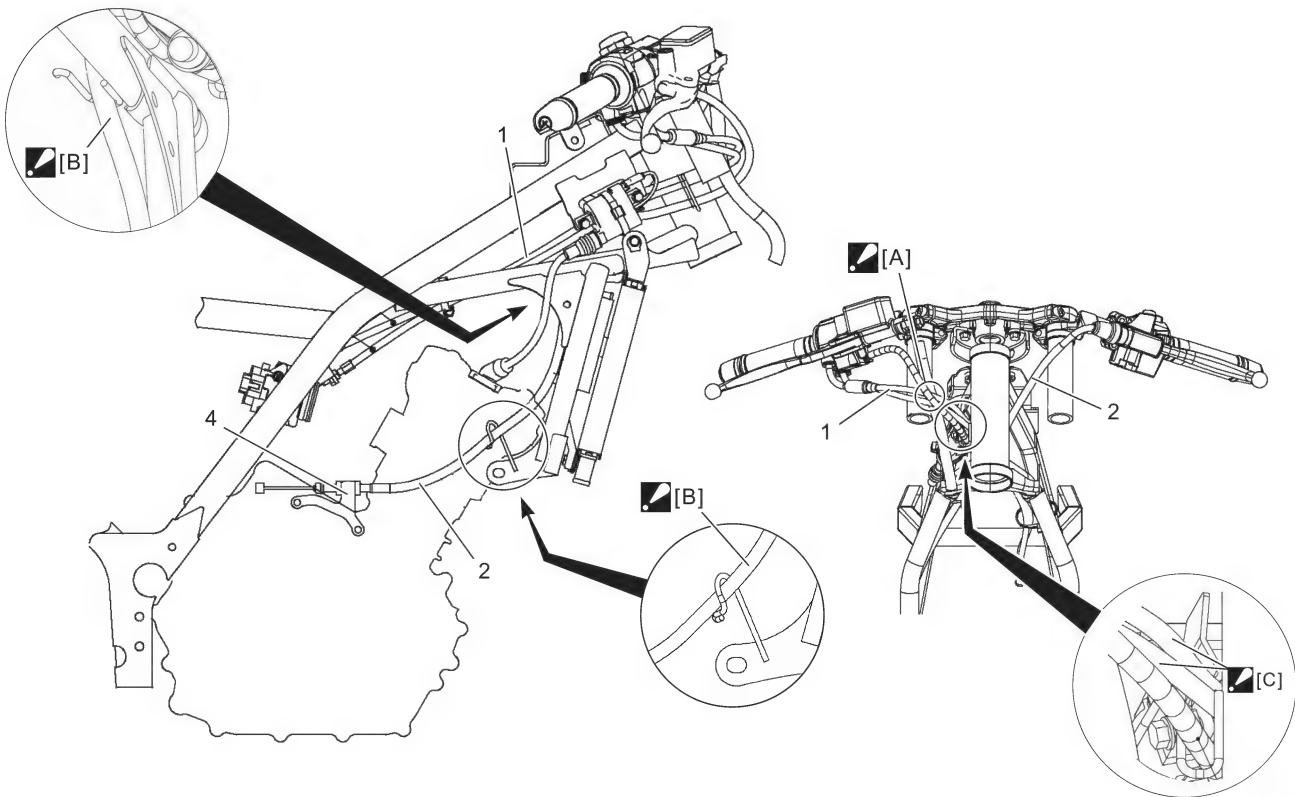
Identify the position of each removed part. Organize the parts in their respective groups (e.g., intake, exhaust) so that they can be reinstalled in their original positions.

Schematic and Routing Diagram




Throttle Cable Routing Diagram

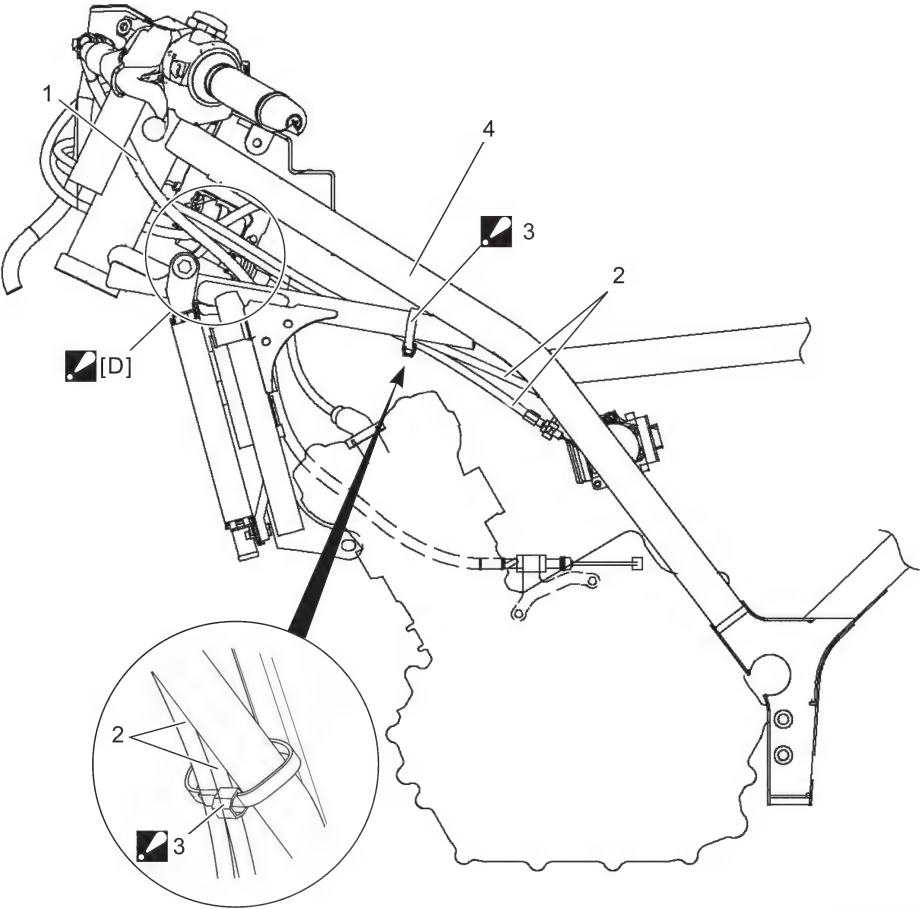
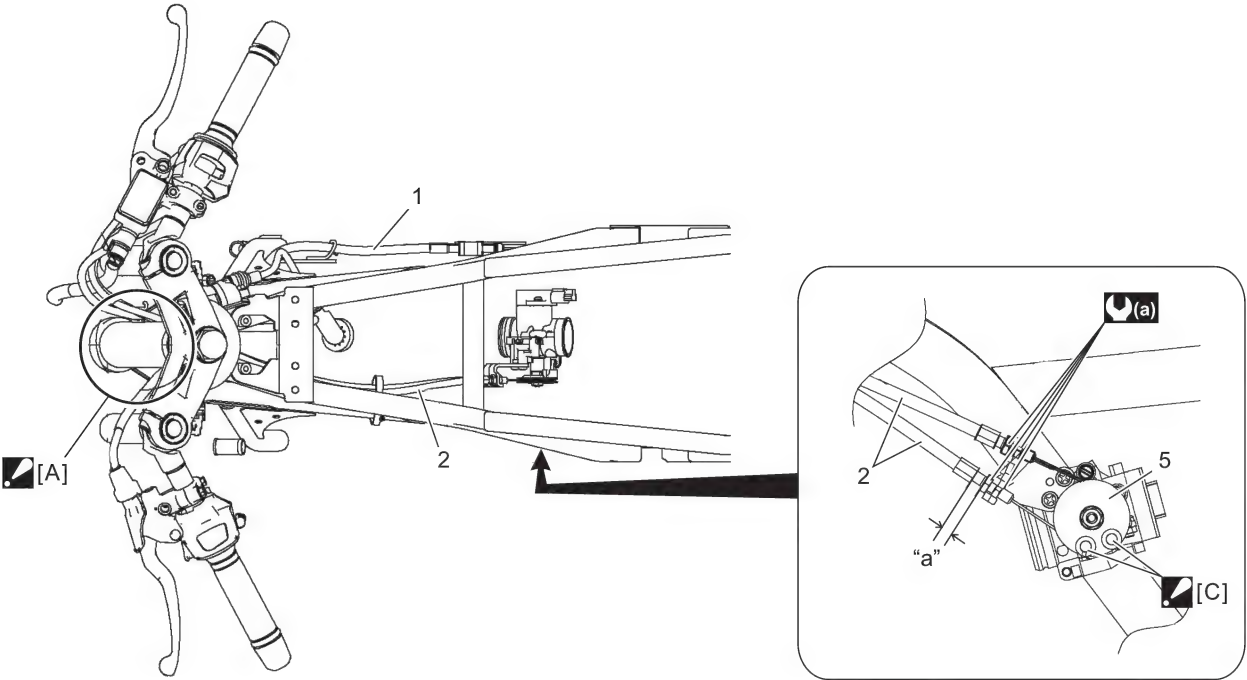
GSX R 150 Model







BENH23K21402001



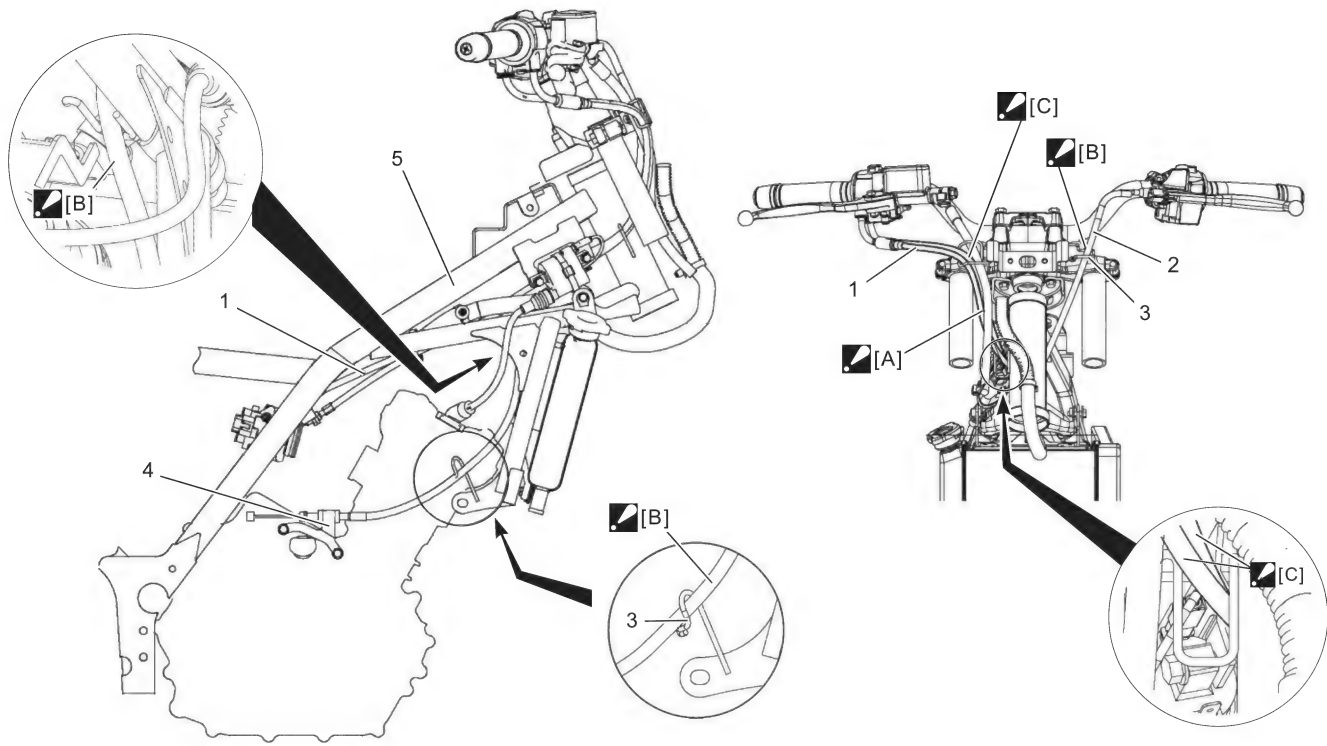
IH23K1140063-01

 [A]: Pass the clutch cable behind the clutch cable guide.	2. Clutch cable
 [B]: Pass the clutch cable into the cable guide.	3. Clutch cable guide
 [C]: Pass the throttle cable into the cable guide.	4. Clutch cable stopper
1. Throttle cable	






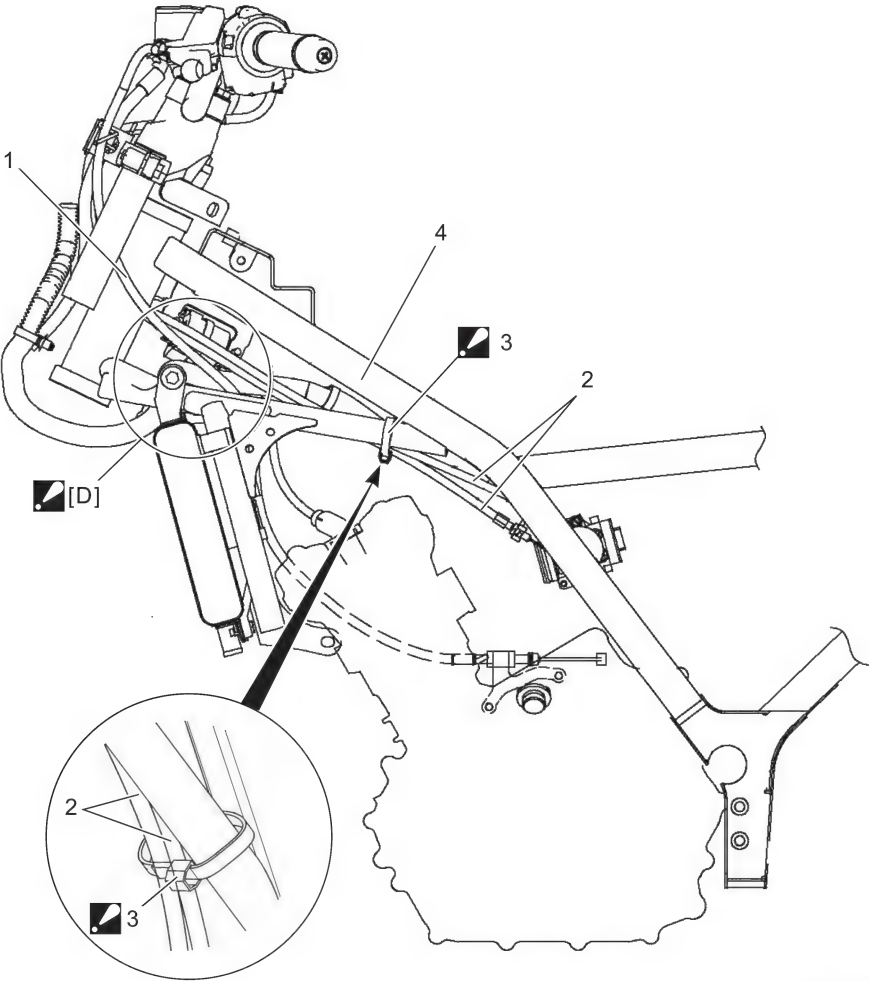
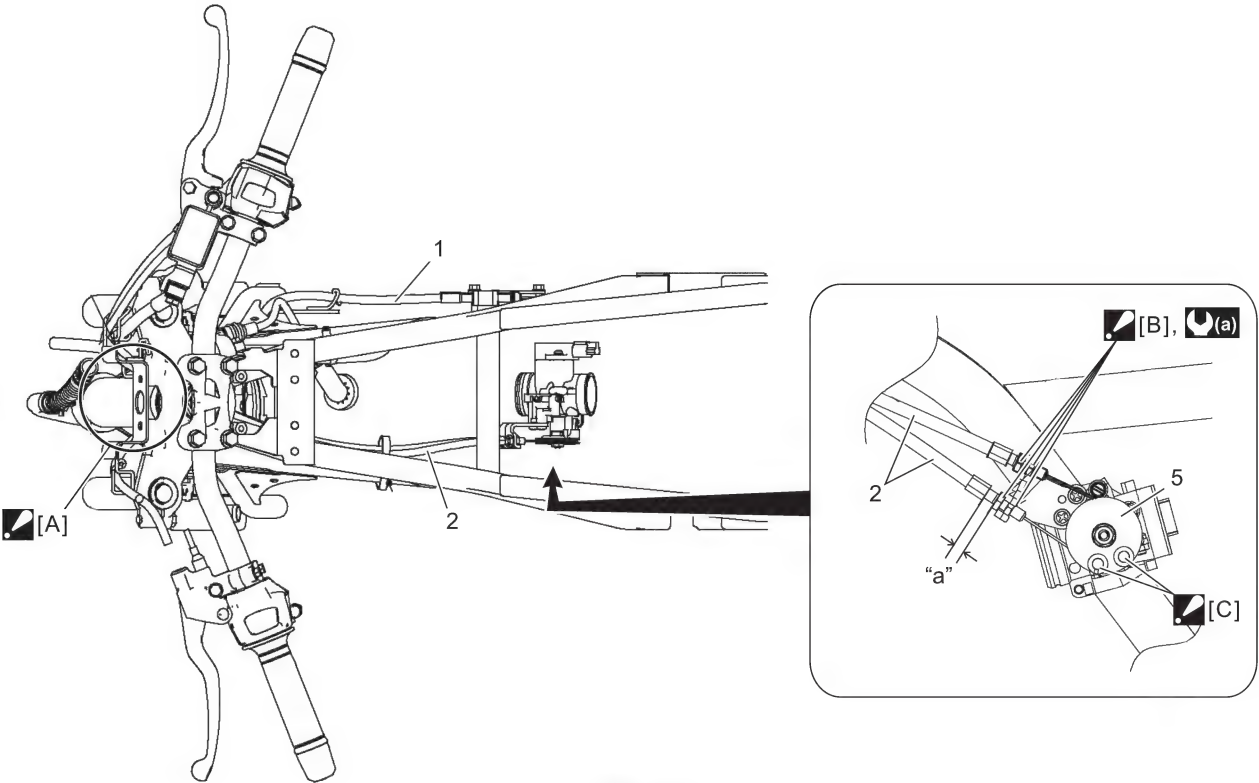
 [A]: Pass the clutch cable through the left side of the frame head pipe, and the throttle cable through the right side of the frame head pipe.	 3. Throttle cable clamp : Attach the clamp at the rearmost part of the frame (horizontal part) as shown in the figure. Face the clamp lock downward. Point the clamp tip to the right.
 [B]: Install the throttle cable with the thread portion fully screwed-in.	4. Frame (horizontal part)
 [C]: Connect the throttle cable end to this hole.	5. Throttle body assembly
 [D]: Pass the clutch cable over the throttle cable.	"a": Max. 1.5 mm (0.059 in)
1. Clutch cable	 (a) : 4.5 N·m (0.46 kgf-m, 3.35 lbf-ft)
2. Throttle cable	

GSX S 150 Model



IH23K2140001-01

 [A]: Pass the throttle cable behind the brake hose.	2. Clutch cable
 [B]: Pass the clutch cable into the cable guide.	3. Clutch cable guide
 [C]: Pass the throttle cable into the cable guide.	4. Clutch cable stopper
1. Throttle cable	5. Frame



<div></div> [A]: Pass the clutch cable through the left side of the frame head pipe, and the throttle cable through the right side of the frame head pipe.	<div></div> 3. Throttle cable clamp : Attach the clamp at the rearmost part of the frame (horizontal part) as shown in the figure. Face the clamp lock downward. Point the clamp tip to the right.
<div></div> [B]: Install the throttle cable with the thread portion fully screwed-in.	4. Frame (horizontal part)
<div></div> [C]: Connect the throttle cable end to this hole.	5. Throttle body assembly
<div></div> [D]: Pass the clutch cable under the throttle cable. Throttle and clutch cables must past through left side of harness.	"a": Max. 1.5 mm (0.059 in)
1. Clutch cable	<div></div> (a) : 4.5 N·m (0.46 kgf-m, 3.35 lbf-ft)
2. Throttle cable	

Diagnostic Information and Procedures

Compression Pressure Check

BENH23K21404001

The compression pressure reading of a cylinder is a good indicator of its internal condition.

The decision to overhaul the cylinder is often based on the results of a compression test. Periodic maintenance records kept at your dealership should include compression readings for each maintenance service.

NOTE

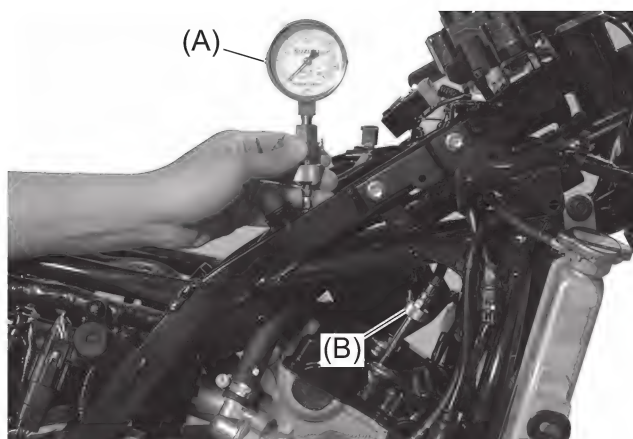
- Before checking the engine for compression pressure, make sure that the cylinder head bolts are tightened to the specified torque and the valve clearances are properly adjusted.
- Make sure that the battery is in fully-charged condition.

- 1) Warm up the engine.
- 2) Remove the spark plug. (Page 1H-5)
- 3) Install the compression gauge and adapter in the spark plug hole. Make sure that the connection is tight.

Special tool

(A): 09915-64512

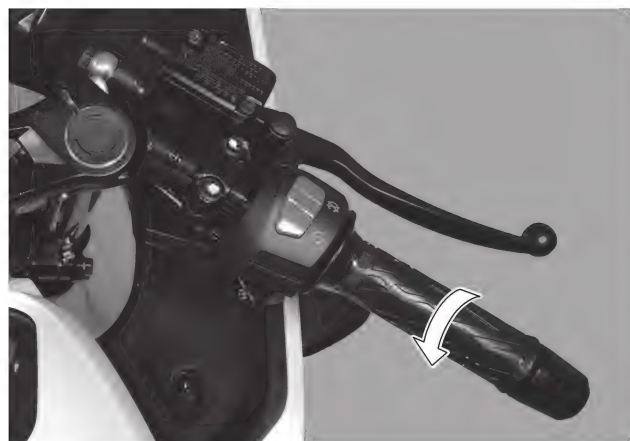
(B): 09913-10750



IH23K1140016-01

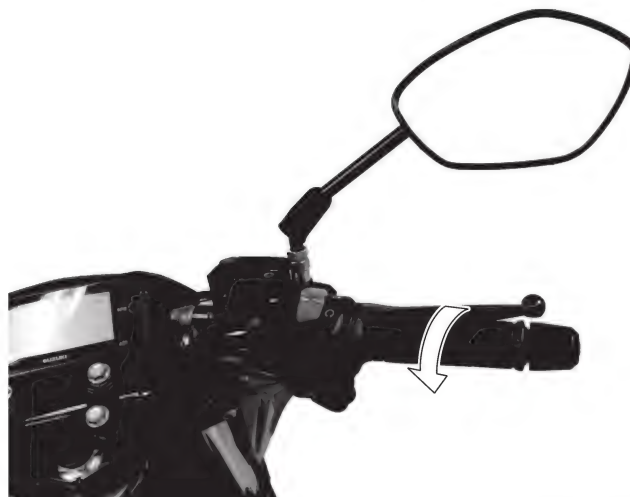
- 4) Disconnect the fuel injector coupler. (Page 1G-15)
- 5) Keep the throttle grip in the fully-opened position.

GSX R 150 Model



IH23K1140017-01

GSX S 150 Model



IH23K2140003-01

- 1) Press the starter switch and crank the engine for a few seconds. Record the maximum gauge reading as the cylinder compression.

Compression pressure

[Standard]: 1000 – 1400 kPa (10.2 – 14.2 kgf/cm², 145 – 203 psi)

[Limit]: 800 kPa (8.16 kgf/cm², 116 psi)

1D-6 Engine Mechanical:

If compression pressure is less than the service limit, any of the following reasons can be the cause:

- Excessively worn cylinder walls
- Worn piston or piston rings
- Piston rings stuck in grooves

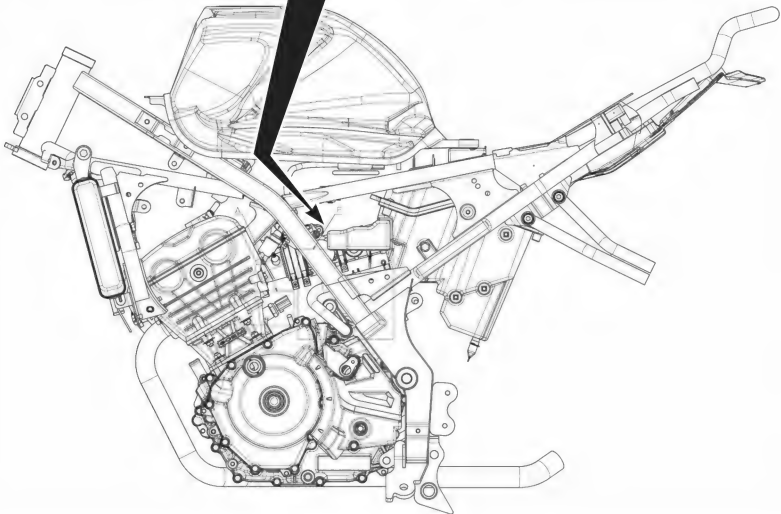
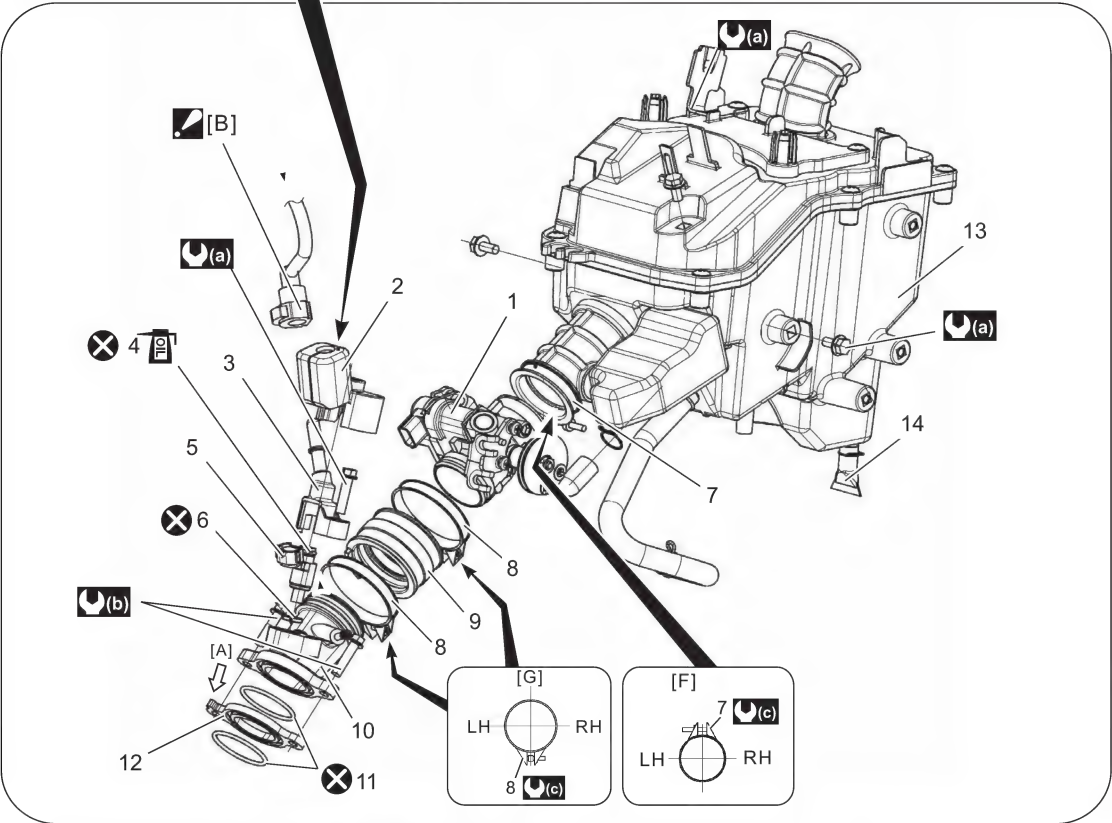
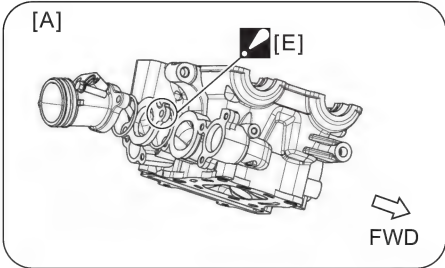
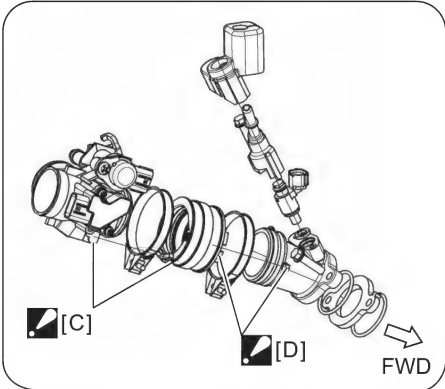
- Poor valve seating
- Ruptured or otherwise defective cylinder head gasket

2) After checking the compression pressure, install the removed parts.

Repair Instructions

Intake System Components

BENH23K21406001



1D-8 Engine Mechanical:

[A]: View [A]	2. Fuel injector cover	10. Intake pipe No.1
☑ [B]: Insert the fuel feed hose joint securely into the fuel hose joint until a click is heard.	3. Fuel hose joint	11. O-ring
☑ [C]: Align protrusion on the throttle body with cutaway in the intake pipe No.2.	4. Fuel injector O-ring	12. Intake pipe insulator
☑ [D]: Align protrusion on the intake pipe No.1 with cutaway in the intake pipe No.2.	5. Fuel injector	13. Air cleaner assembly
☑ [E]: Face the protrusion on the intake pipe insulator toward the upper right.	6. Fuel injector insulator	14. Drain plug
[F]: Throttle body clamp	7. Throttle body clamp	⚙(a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
[G]: Intake pipe clamp	8. Intake pipe clamp	⚙(b) : 1.0 N·m → 6.5 N·m (0.10 kgf-m → 0.66 kgf-m, 0.75 lbf-ft → 4.80 lbf-ft)
1. Throttle body assembly	9. Intake pipe No.2	⚙(c) : 1.5 N·m (0.15 kgf-m, 1.10 lbf-ft)

Air Cleaner Element Removal and Installation
BENH23K21406002

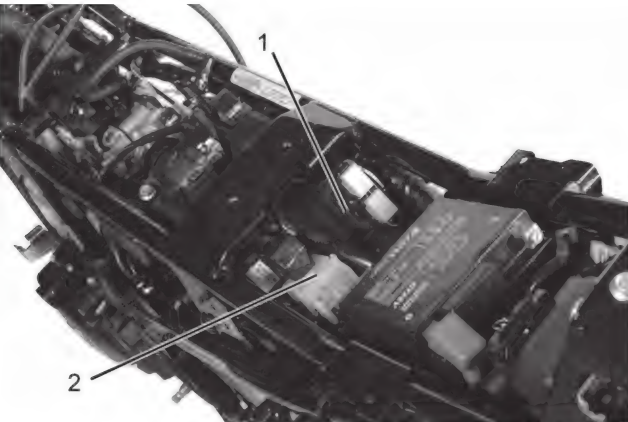
Removal

- 1) Open front seat. (Page 9D-20)
- 2) GSX R 150 Model
Remove front fairing. (Page 9D-22)
GSX S 150 Model
Remove fuel tank side cover. (Page 9D-23)
- 3) Remove fuel tank. (Page 1G-9)



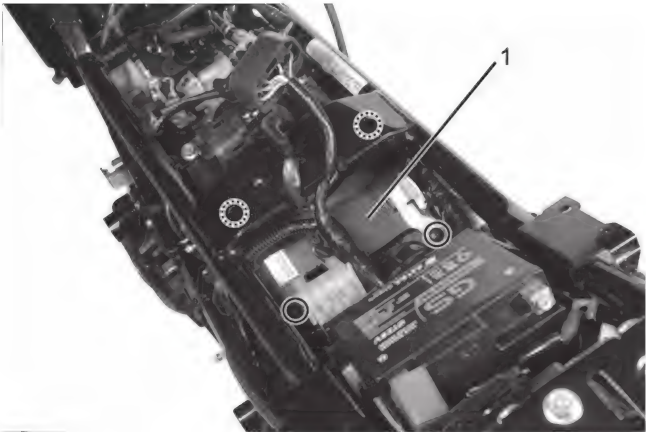
IH23K1140040-03

- 4) Remove sub relay and cooling fan relay holder (1) and motor starter fuse (2).



IH23K1140038-03

- 5) Remove air cleaner cover (1).



IH23K1140039-02

- 6) Remove the air cleaner element (1).



IH23K1140020-01

Installation

Install the air cleaner element in the reverse order of removal.

Air Cleaner Element Inspection

BENH23K21406003

Refer to "Air Cleaner Element Removal and Installation" (Page 1D-8).

- 1) Inspect the air cleaner element for clogging. If it is clogged with dirt, replace it with a new one.

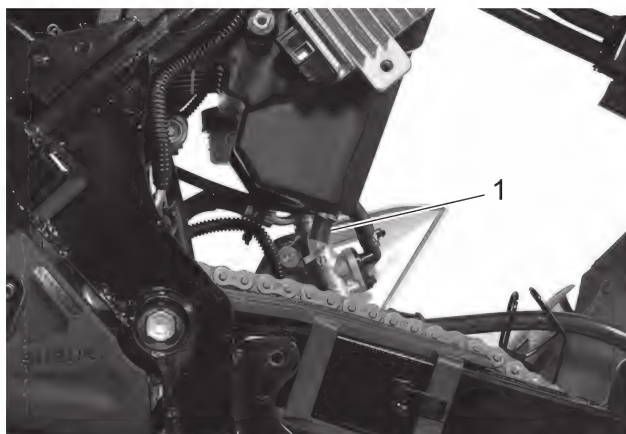
NOTICE

- Do not blow the air cleaner element with compressed air.
- If driving under dusty conditions, clean the air cleaner element more frequently. Make sure that the air cleaner is in good condition at all times. Life of the engine depends largely on this component.



IH23K1140021-01

- 2) Remove the drain plug (1) and drain water from the air cleaner box.



IH23K1140022-01

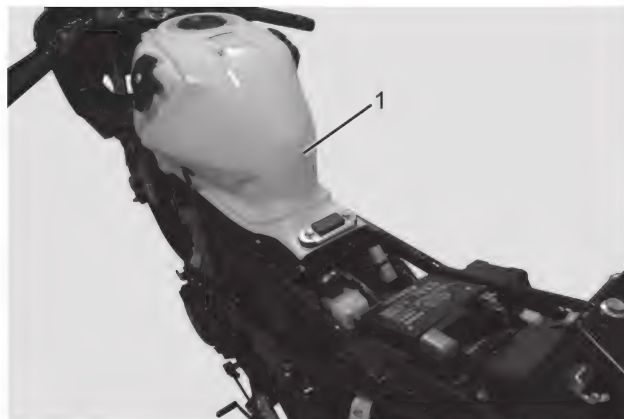
- 3) Install the removed parts.

Air Cleaner Box Removal and Installation

BENH23K21406004

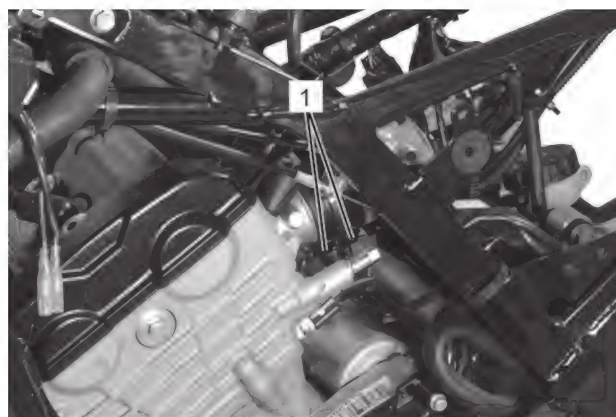
Removal

- 1) Remove the following parts.
 - a) Front seat. (Page 9D-20)
 - b) GSX R 150 Model
Front fairing. (Page 9D-22)
GSX S 150 Model
Fuel tank side cover. (Page 9D-23)
 - c) Frame cover: (Page 9D-30)
 - d) Fuel tank. (Page 1G-9)



IH23K1140040-03

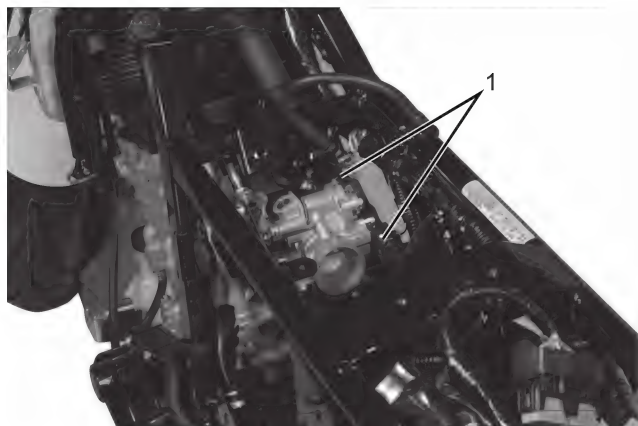
- 2) Remove rear fender rear. (Page 9D-31)
- 3) Remove rear fender front. (Page 9D-32)
- 4) Loosen the air cleaner outlet tube clamp screw (1).



IH23K1140042-02

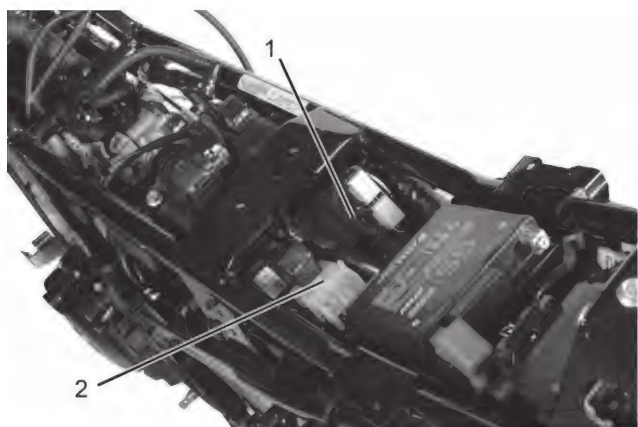
1D-10 Engine Mechanical:

- 5) Disconnect the IAP/TP/IAT and ISC sensor coupler (1).



IH23K1140043-01

- 6) Remove sub relay and cooling fan relay holder (1) and motor starter fuse (2).



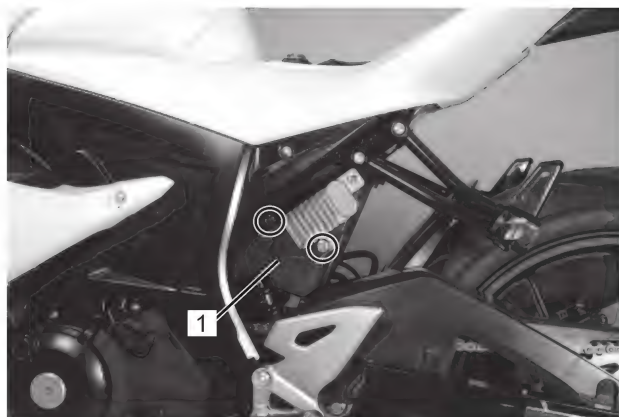
IH23K1140038-03

- 7) Remove turn signal relay (1) and TO sensor (2).



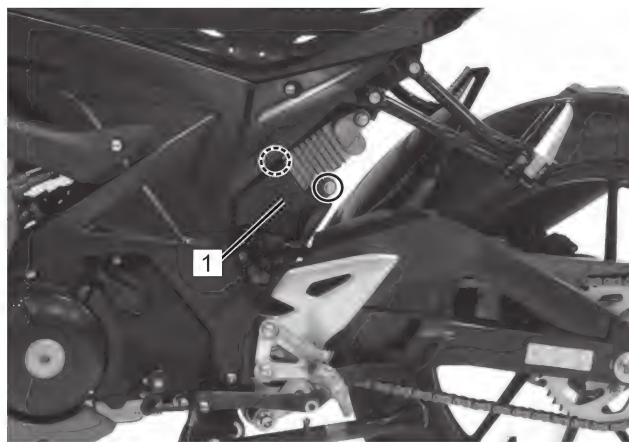
IH23K1140045-02

- 8) Remove regulator/rectifier plate (1).
GSX R 150 Model



IH23K1140047-02

GSX S 150 Model



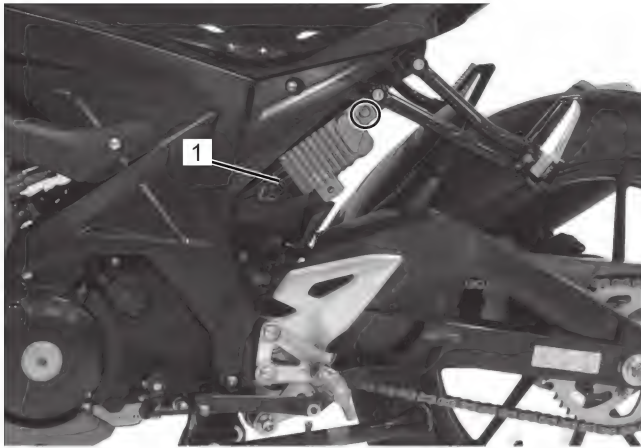
IH23K2140004-01

- 9) Remove regulator/rectifier bolt and then remove regulator/rectifier coupler (1).
GSX R 150 Model



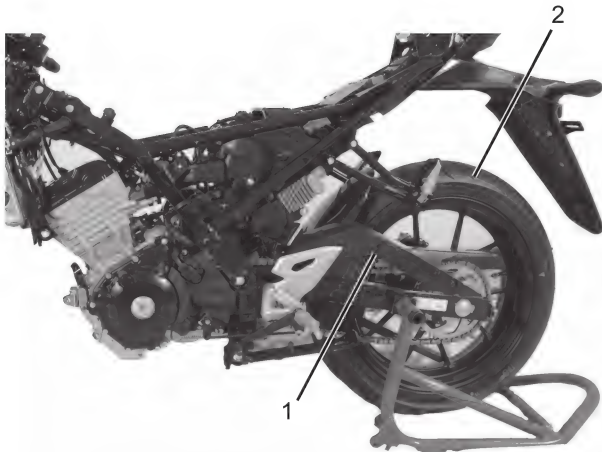
IH23K1140048-02

GSX S 150 Model



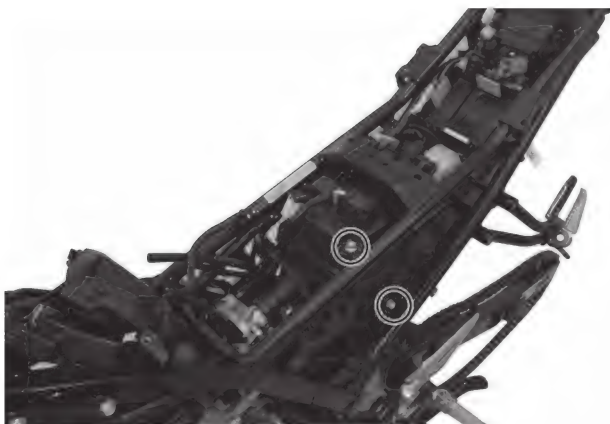
IH23K2140005-01

10) Remove rear wheel (1) and chain case (2). (Page 2D-6)



IH23K1140041-01

11) Remove air cleaner box bolt.

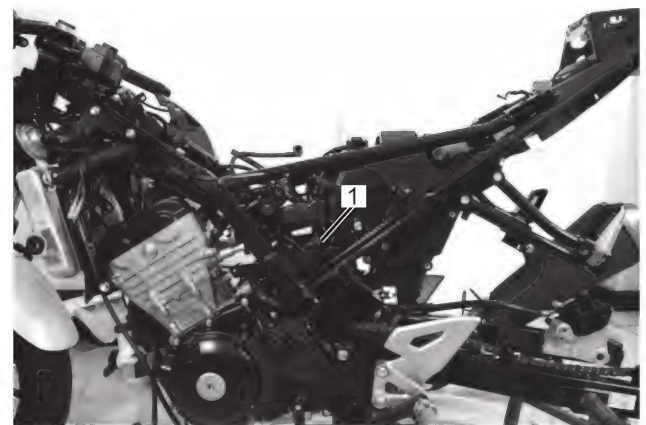


IH23K1140044-03



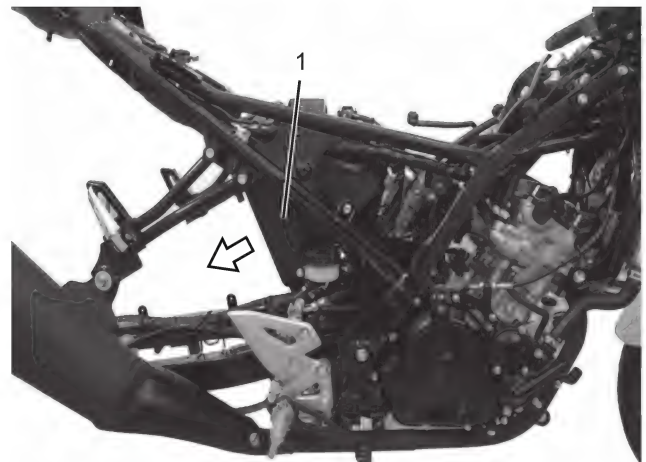
IH23K1140046-03

12) Disconnect the PCV hose (1).



IH23K1140049-02

13) Remove the air cleaner box (1) to the bottom through rear swingarm side



IH23K1140050-02

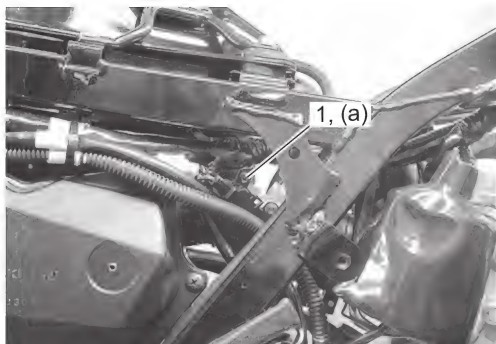
Installation

Install the air cleaner box in the reverse order of removal. Pay attention to the following points:

- Connect the PCV hose. Refer to "PCV Hose Routing Diagram" in Section 1B (Page 1B-3).
- Position the air cleaner outlet tube clamp and tighten the air cleaner outlet tube clamp screw (1) to the specified torque. Refer to "Intake System Components" (Page 1D-6).

Tightening torque

Air cleaner outlet tube clamp screw (a): 1.5 N·m (0.15 kgf-m, 1.10 lbf-ft)

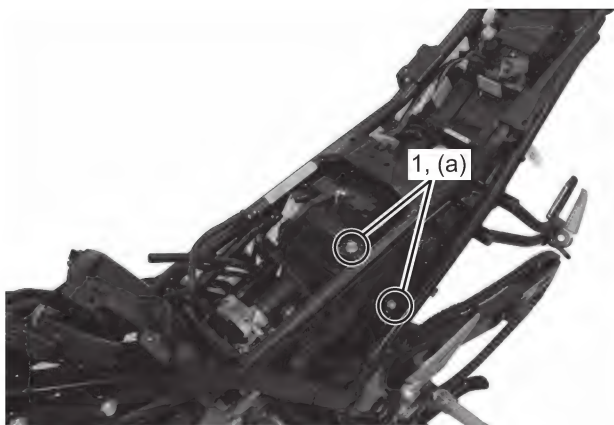


IG12K1140015-01

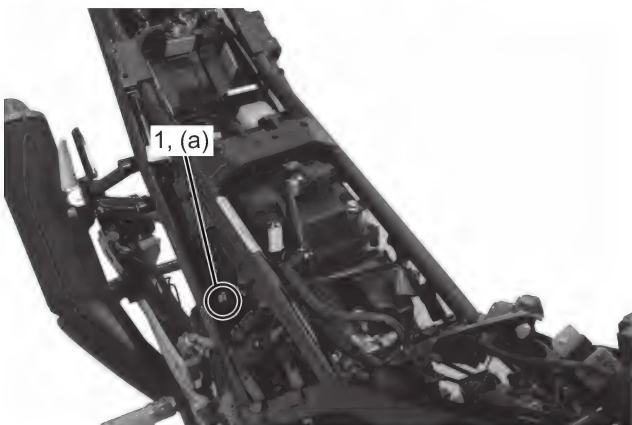
- Tighten the air cleaner box bolts (1) to specified torque.

Tightening torque

Air cleaner box bolt (a): 8 N·m (0.8 kgf-m, 5.9 lbf-ft)



IH23K1140051-02



IH23K1140052-02

Throttle Cable Play On-Vehicle Inspection and Adjustment

BENH23K21406005

Inspection

Turn the throttle grip slowly and inspect the throttle cable play "a" at the periphery of the grip.

Throttle cable play

[Standard]: 2.0 – 4.0 mm (0.079 – 0.157 in)



IH23K1140023-02

Adjustment

- 1) Move the rubber boot (1).
- 2) Loosen the lock-nut (2) of the throttle cable.
- 3) Turn the adjuster (3) in or out until the throttle cable play (at the throttle grip) is within the specification.

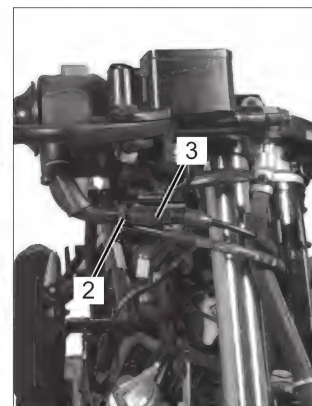
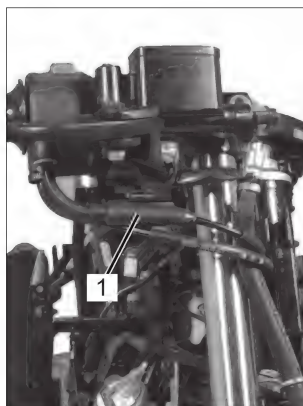
Throttle cable play

[Standard]: 2.0 – 4.0 mm (0.08 – 0.16 in)

- 4) Tighten the lock-nut while holding the adjuster.

⚠ WARNING

After the adjustment is completed, check that handlebar movement does not raise the engine idle speed and the throttle grip returns smoothly and automatically.



IH23K1140053-02

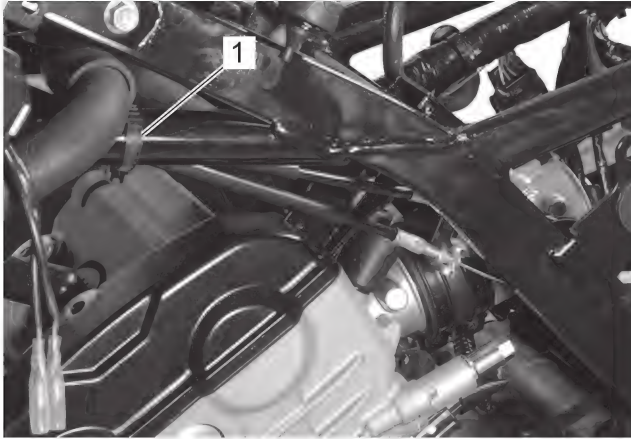
- 5) Install the rubber boot.

Throttle Cable Removal and Installation

BENH23K21406006

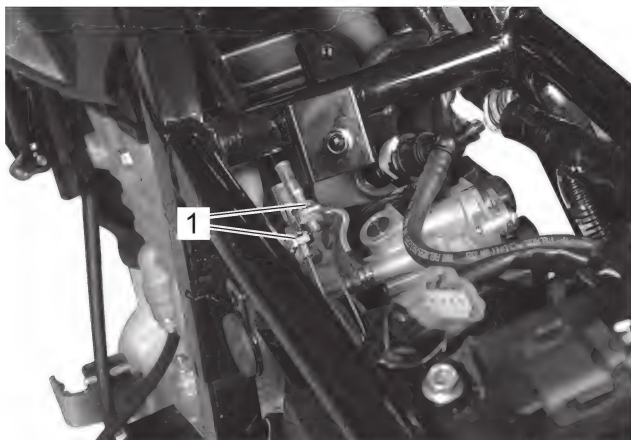
Removal

- 1) Disconnect the throttle cable from right handle switch. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-5).
- 2) Remove the clamp (1).



IH23K1140024-02

- 3) Loosen the lock-nut (1) and disconnect the throttle cable from throttle body.



IH23K1140025-02

Installation

Install the throttle cable in reverse order of removal. Pay attention to the following points:

- Install the throttle cable as shown in the throttle cable routing diagram. Refer to "Throttle Cable Routing Diagram" (Page 1D-1).
- After installing, check the throttle cable play and proper operation. (Page 1D-12)

Throttle Cable Inspection

BENH23K21406007

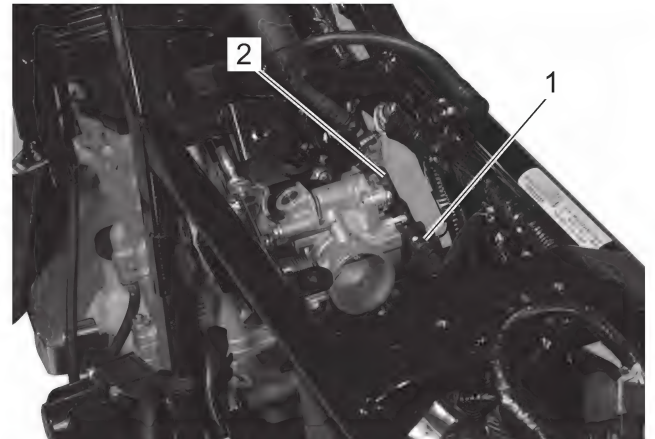
Check that the throttle cable moves smoothly from full close to full open, and in reverse direction. If it does not move smoothly, lubricate the throttle cable.

Throttle Body Removal and Installation

BENH23K21406008

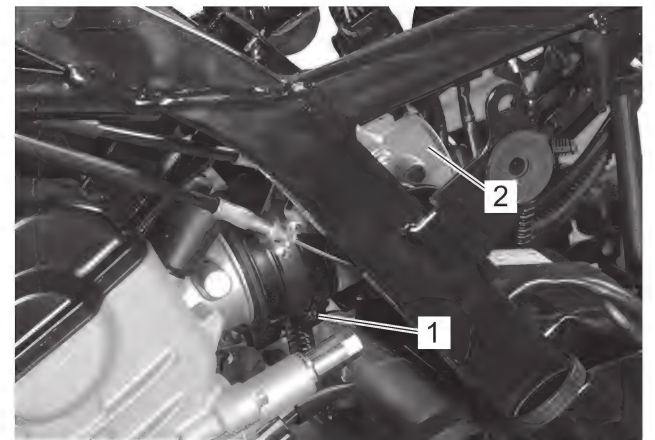
Removal

- 1) Remove the air cleaner box. (Page 1D-9)
- 2) Disconnect the throttle cable from throttle body. (Page 1D-13)
- 3) Disconnect the IAP/TP/IAT sensor coupler (1) and ISC sensor coupler (2).



IH23K1140026-02

- 4) Loosen the throttle body clamp screw (1), and then remove throttle body (2).

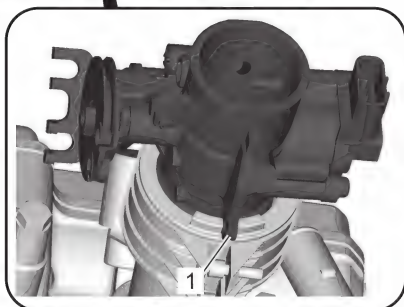
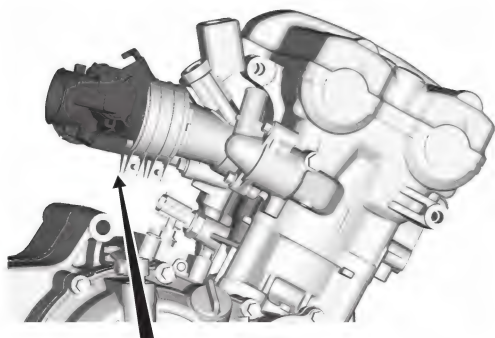


IH23K1140027-02

Installation

Install the throttle body in reverse order of removal.
Pay attention to the following points:

- Align protrusion (1) on the throttle body with cutaway in the intake pipe No.2.

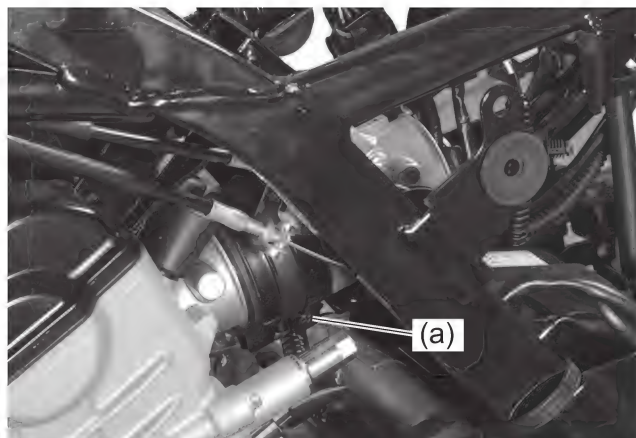


IG12K1140020-01

- Tighten the throttle body clamp screw to the specified torque.

Tightening torque

Throttle body clamp screw (a): 1.5 N·m (0.15 kgf-m, 1.10 lbf-ft)



IH23K1140028-02

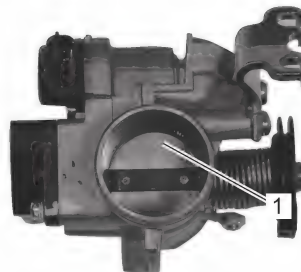
- After installing, check throttle cable play and proper operation. (Page 1D-12)

Throttle Body Disassembly and Reassembly

BENH23K21406009

NOTE

- Never remove the throttle valve (1).



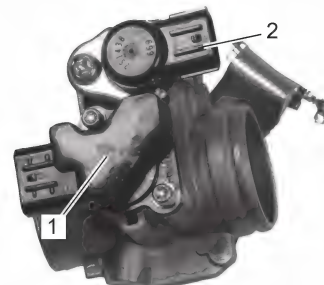
IH23K1140029-01

- Never remove or turn the screw (1) and lock nut (2).



IH23K1140030-01

- Never remove the IAP/TP/IAT sensor (1). The IAP/TP/IAT sensor is available only as the throttle body assembly.
- When you reassembly ISC valve (2), make sure that ISC valve length not less than the specification.



IH23K1140031-02

Throttle Body Inspection and Cleaning

BENH23K21406010

Refer to "Throttle Body Removal and Installation" (Page 1D-13).

Inspection

Check following items for any defects or clogging. Replace the damaged part or throttle body, if necessary.

- O-ring
- Throttle valve
- ISC valve house

Cleaning

- Plug the sensor hole(s) in the main bore with tape or the like.
- Clean the main bore, throttle valve and passage(s) using a cotton swab moistened with a carburetor cleaning chemical.
- Clean ISC valve using a cotton swab moistened with a carburetor cleaning chemical.

NOTICE

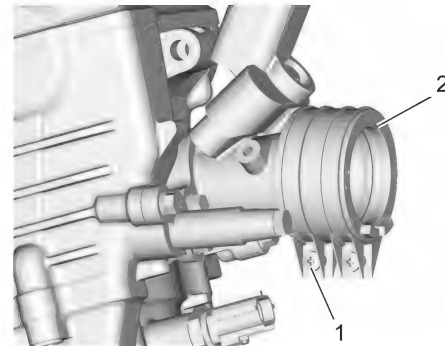
- **Some carburetor cleaning chemicals are very corrosive. Always follow the chemical manufacturer's instructions for proper use, handling and storage.**
- **Do not dip the throttle body in a carburetor cleaning chemical or do not spray the cleaning chemical directly to the throttle valve. Cleaning chemical will penetrate into electronic parts resulting in cause of malfunction.**
- **Do not use wire to clean passages. Wire may damage them.**
- **If the throttle valve is molybdenum-coated, avoid applying cleaning chemical to the coated surfaces. Cleaning chemical loosens the coating, so the air-tightness of the throttle valve would be impaired.**
- **Do not apply any cleaning chemical to parts made of rubber and plastic materials. Cleaning chemical may damage these parts.**
- **Do not clean ISC valve direct with cleaning chemical or carburetor cleaning.**
- **Do not blow ISC valve with compressed air.**

Intake Pipe Removal and Installation

BENH23K21406011

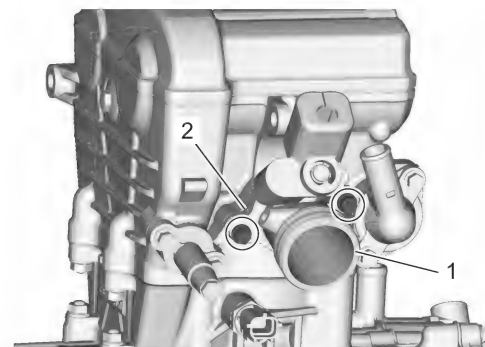
Removal

- 1) Remove the throttle body. (Page 1D-13)
- 2) Loosen the intake pipe No.2 clamp screw (1) and then remove the intake pipe No.2 (2).



IG12K1140027-01

- 3) Disconnect the fuel feed hose from fuel injector. (Page 1G-6)
- 4) Remove the intake pipe No.1 (1) and intake pipe insulator (2).

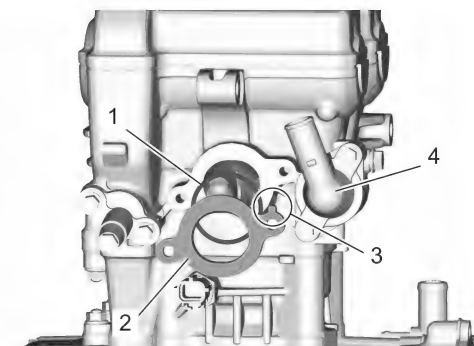


IG12K1140028-01

Installation

Install the intake pipe in reverse order of removal. Pay attention to the following points:

- Install the intake pipe No.1 as follows.
 - a. Install a new O-ring (1) to the insulator (2).
 - b. Face the protrusion (3) of insulator to thermostat (4).



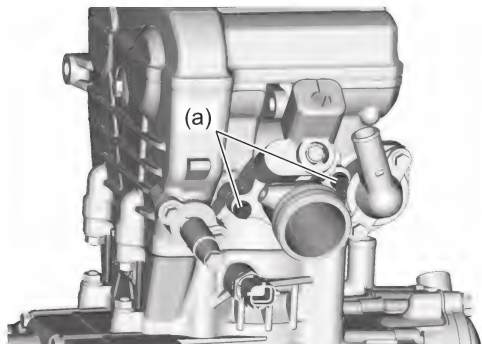
IG12K1140029-01

- c. Install a new O-ring to the intake pipe.
- d. Tighten the intake pipe No.1 mounting bolts to 1.0 N·m (0.10 kgf-m, 0.75 lbf-ft).

- e. Retighten them to 6.5 N·m (0.66 kgf-m, 4.80 lbf-ft).

Tightening torque

Intake pipe mounting bolt (a): 1.0 N·m → 6.5 N·m (0.10 kgf-m → 0.66 kgf-m, 0.75 lbf-ft → 4.80 lbf-ft)

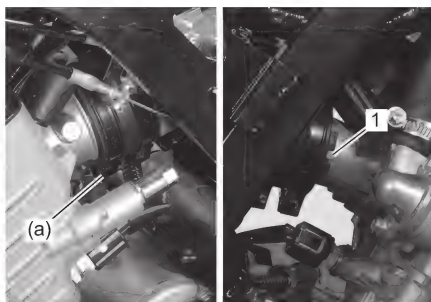


IG12K1140030-01

- Align protrusion (1) on the intake pipe No.1 with cutaway in the intake pipe No.2.
- Tighten the intake pipe No.2 clamp screw to the specified torque.

Tightening torque

Intake pipe No.2 clamp screw (a): 1.5 N·m (0.15 kgf-m, 1.10 lbf-ft)



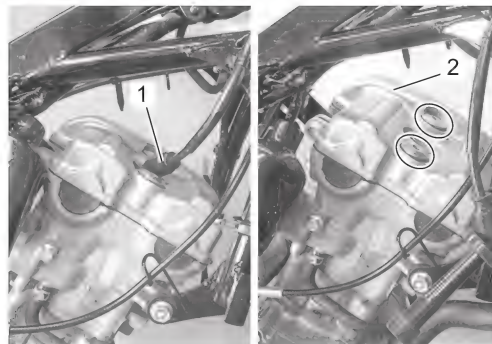
IH23K1140033-01

Cylinder Head Cover Removal and Installation

BENH23K21406012

Removal

- 1) Remove the following parts.
 - a) Under cowling: (Page 9D-25)
 - b) Front box: (Page 9D-28)
- 2) Disconnect the spark plug cap (1).
- 3) Remove the cylinder head cover (2) and its gasket.



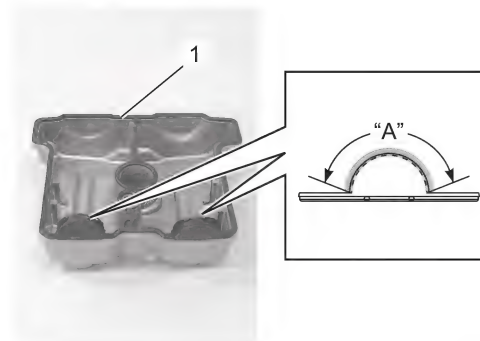
IG12K1140032-01

Installation

Install the cylinder head cover in the reverse order of removal. Pay attention to the following points:

- Install a new gasket (1) to the cylinder head cover.
- Apply sealant to the "A" of the gasket as shown.

"A": Sealant 99000-31140 (SUZUKI BOND 1207B)



IG12K1140033-02

- Set new gaskets (1) to the cylinder head cover bolt and coat the both sides of the gasket with engine oil.

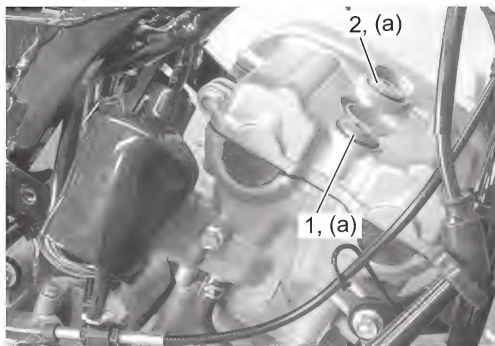


IG12K1140034-01

- Tighten the cylinder head cover bolts as follows.
 - a. Tighten the cylinder head cover bolt (1) until its gasket comes in contact with the cylinder head cover.
 - b. Tighten the cylinder head cover bolt (2) until its gasket comes in contact with the cylinder head cover.
 - c. Tighten the cylinder head cover bolt (2) to the specified torque.
 - d. Tighten the cylinder head cover bolt (1) to the specified torque.

Tightening torque

Cylinder head cover bolt (a): 12 N·m (1.2 kgf-m, 9.0 lbf-ft)

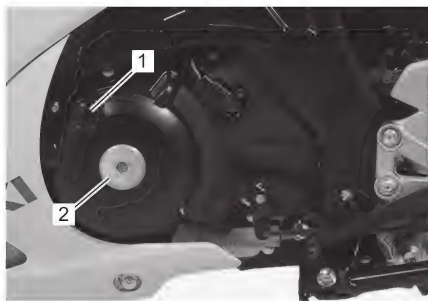


IH2K1140035-02

Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal

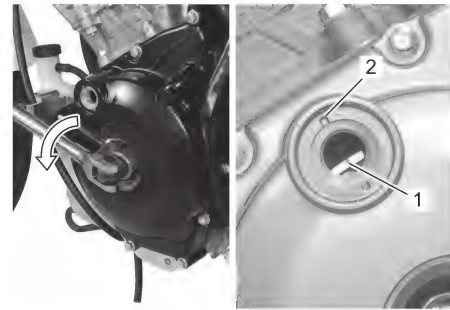
BENH23K21406013

- 1) Remove the cylinder head cover. (Page 1D-16)
- 2) Remove the spark plug. (Page 1H-5)
- 3) Remove the valve timing inspection plug (1) and generator cover plug (2).

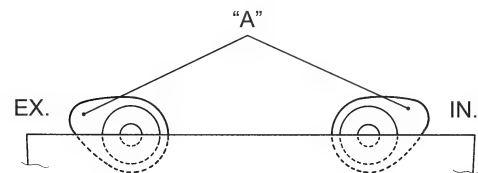


IH23K1140035-02

- 4) Turn the crankshaft to bring the "TDC" line (1) on the generator rotor to the index mark (2) on the generator cover and also to bring both camshafts (EX and IN) to the positions "A" as shown in the figure.



IH23K1140034-03

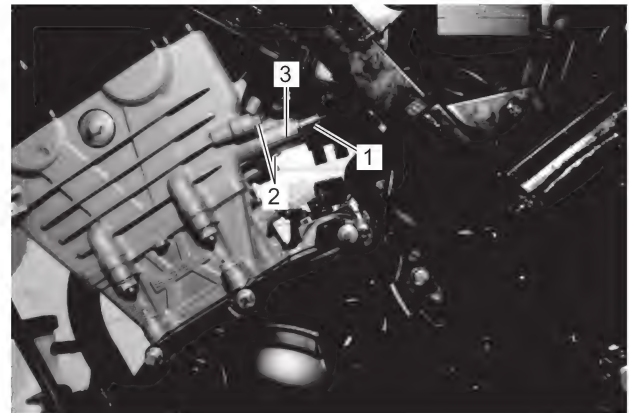


I822H1020023-01

- 5) Remove the cam chain tension adjuster cap bolt (1) and the cam chain tension adjuster bolt (2) and then remove the cam chain tension adjuster assembly (3) gasket.

▲ CAUTION

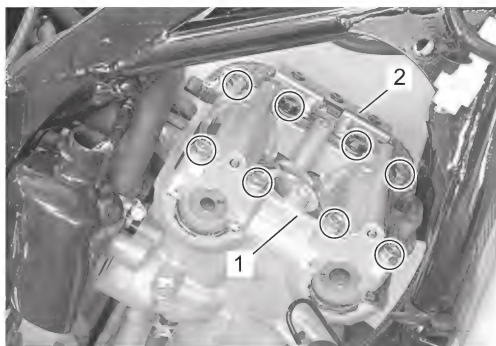
The cam chain tension adjuster cap bolt is spring loaded. Be careful when removing it.



IH23K1140054-02

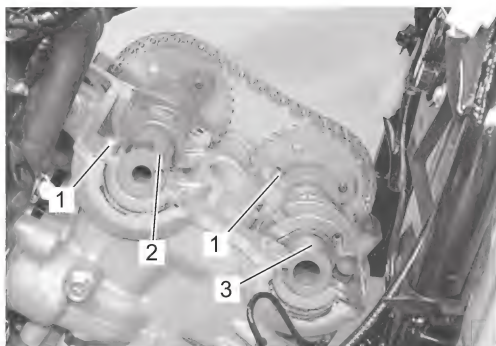
1D-18 Engine Mechanical:

- 6) Remove the camshaft housing (1) and cam chain guide No.2 (2).



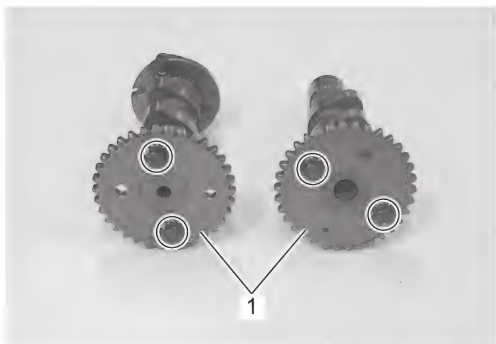
IG12K1140039-01

- 7) Remove the dowel pins (1).
8) Remove the intake camshaft (2) and exhaust camshaft (3).



IG12K1140040-01

- 9) Remove the cam sprockets (1).



IG12K1140041-02

Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation

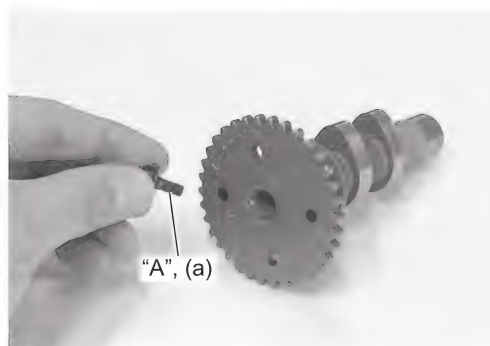
BENH23K21406014

- 1) Apply thread lock to the cam sprocket bolts and tighten them to the specified torque.

“A”: Thread lock cement 99000–32030 (THREAD LOCK CEMENT 1303B)

Tightening torque

Cam sprocket bolt (a): 11 N·m (1.1 kgf-m, 8.5 lbf-ft)



IG12K1140042-03

- 2) Apply a small quantity of molybdenum oil solution to the cam faces.

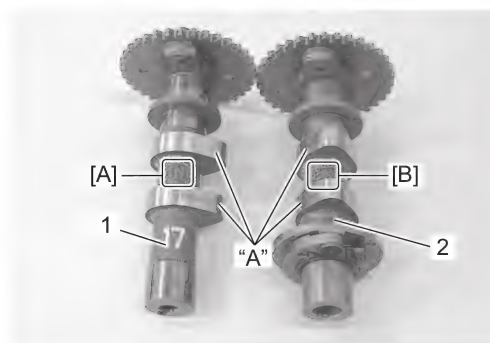
NOTE

Identify the camshafts according to the following embosses letters.

Intake camshaft (1): [A]

Exhaust camshaft (2): [B]

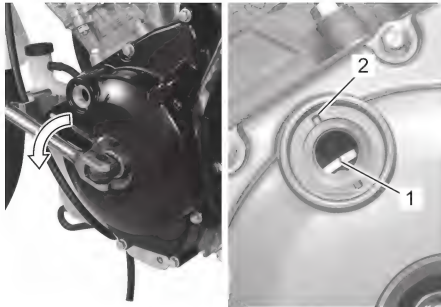
“A”: Assembly lubrication (Molybdenum oil solution)



IG12K1140043-03

[A]: IN	[B]: EX
---------	---------

- 3) Apply engine oil to the camshaft journals.
- 4) Turn the crankshaft to align the "TDC" line (1) on the generator rotor with the index mark (2) on the generator cover while keeping the cam chain pulled upward.



IH23K1140034-03

- 5) Pull the cam chain lightly.
- 6) Turn the exhaust camshaft so that the arrow is aligned with the gasket surface of the cylinder head. (The exhaust camshaft sprocket has an arrow marked "1" (1).)
- 7) Engage the cam chain with the exhaust camshaft sprocket.

NOTE

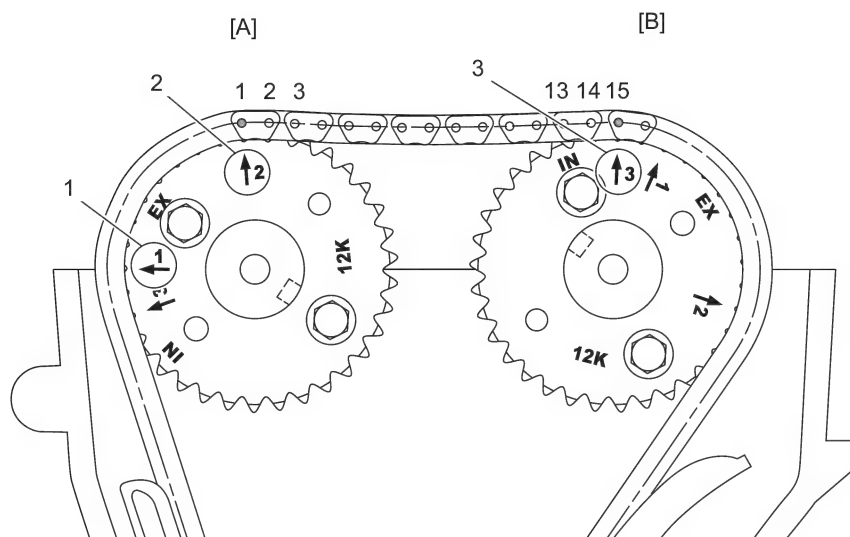
Before installing the camshaft, check that the tappets are installed correctly.

- 8) The other arrow marked "2" (2) should now be pointing straight up. Starting from the roller pin that is directly above the arrow marked "2", count out 15 roller pins (from the exhaust camshaft side going towards the intake camshaft side).

- 9) Engage the 15th roller pin on the cam chain with the arrow marked "3" (3) on the intake camshaft sprocket.

NOTE

The cam chain should now be on all three sprockets. Be careful not to move the crankshaft until the camshaft journal holders and cam chain tension adjuster are secured.

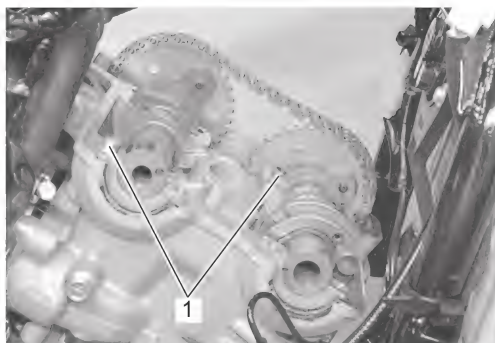


IG12K1140044-03

[A]: Exhaust cam

[B]: Intake cam

- 10) Install the dowel pins (1).



IG12K1140045-01

- 11) Install the camshaft journal holder (1), washers (2) and cam chain guide No.2 (3).

NOTE

The washers are installed between the camshaft journal holder and cam chain guide No.2.

- 12) Have the camshaft journal holder seated evenly by tightening the camshaft journal holder bolts lightly, in the ascending order of numbers.

NOTICE

Damage to cylinder head or camshaft journal holder thrust surfaces may result if the camshaft journal holder is not drawn down evenly.

NOTE

- The ascending order of numbers are indicated on the camshaft journal holder.
- The camshaft journal holder bolts at cam chain guide No.2 are shorter than other ones.

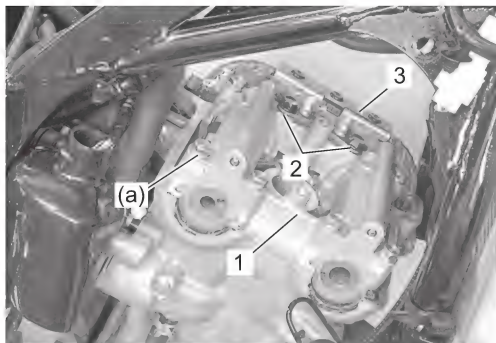
- 13) Tighten the camshaft journal holder bolts in ascending order of numbers to the specified torque.

NOTICE

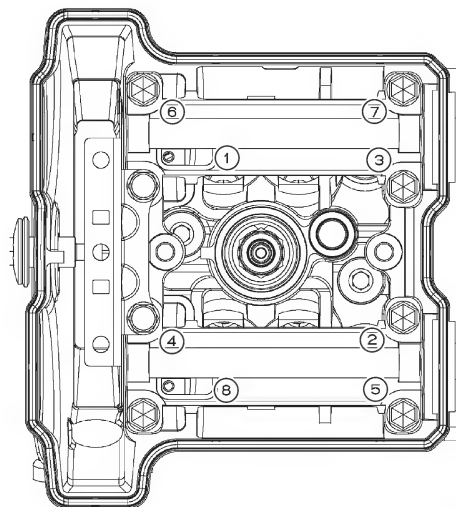
The camshaft journal holder bolts are made of a special material and much superior in strength, compared with other types of high strength bolts.
Take special care not to use other types of bolts.

Tightening torque

Camshaft journal holder bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

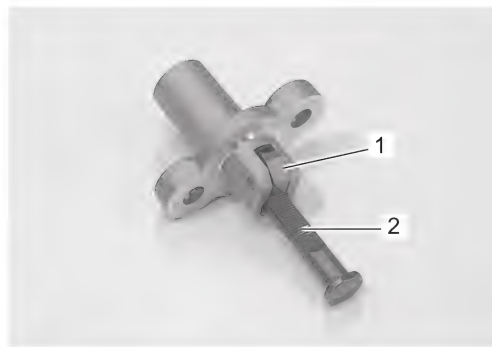


IG12K1140046-01



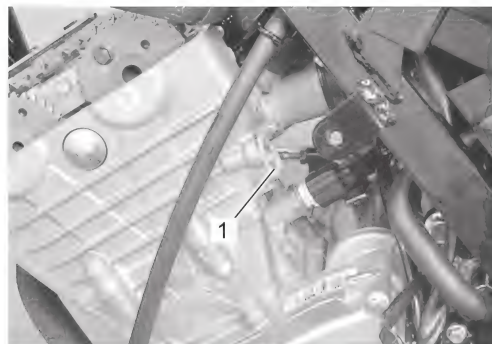
IG12K1140047-01

- 14) Push the stopper (1) and retract the push rod (2).



IG12K1140048-02

- 15) Fit a new gasket (1).

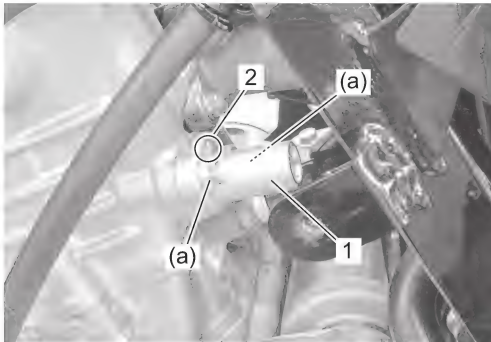


IG12K1140049-01

- 16) Install the cam chain tension adjuster (1) with "UP" mark (2) faced to the top of cylinder head.

Tightening torque

Cam chain tension adjuster bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

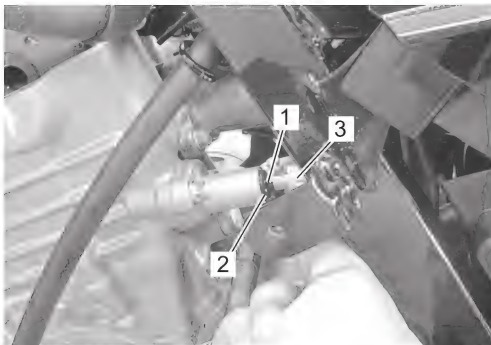


IG12K1140050-01

- 17) Install the spring (1).
18) Install a new gasket (2) and cam chain tension adjuster plug (3).

NOTE

Click sound is heard when extending the push rod.



IG12K1140051-01

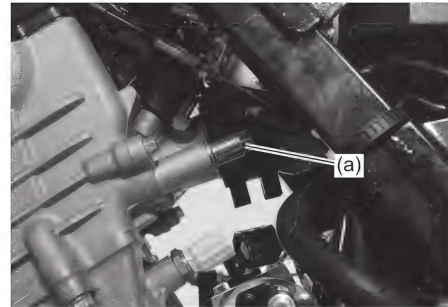
- 19) Tighten the cam chain tension adjuster plug to the specified torque.

NOTICE

After installing the cam chain tension adjuster, check to be sure that the adjuster works properly by checking cam chain slack.

Tightening torque

Cam chain tension adjuster plug (a): 8.0 N·m (0.82 kgf-m, 5.90 lbf-ft)

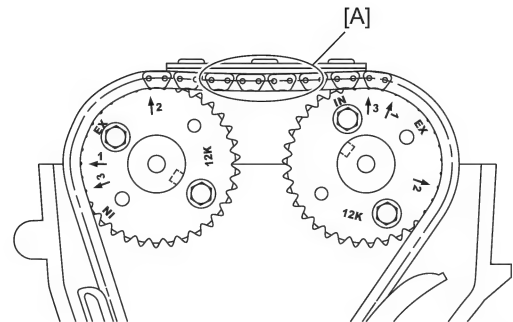


IH23K1140036-01

- 20) Rotate the crankshaft (some turns) and recheck the valve timing.

NOTICE

Make sure that the adjuster works properly by checking that there is no slack at point [A].



IG12K1140053-02

- 21) Inspect the valve clearance. (Page 1D-24)
22) Apply engine oil to the thread part of the generator cover plug hole.

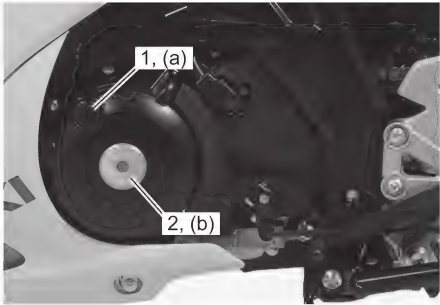
1D-22 Engine Mechanical:

23) Install new O-rings to valve timing inspection plug (1) and generator cover plug (2), and then tighten each plug to the specified torque.

Tightening torque

Valve timing inspection plug (a): 2.3 N·m (0.23 kgf-m, 2.0 lbf-ft)

Generator cover plug (b): 11 N·m (1.1 kgf-m, 8.5 lbf-ft)



IH23K1140037-01

24) Install the spark plug. (Page 1H-5)

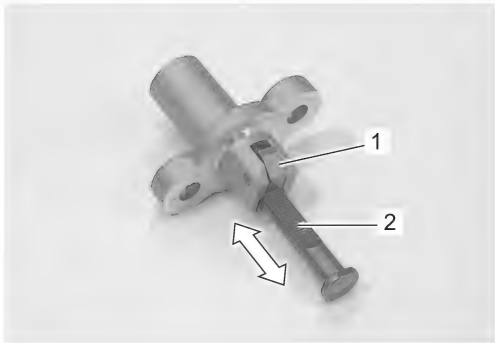
25) Install the cylinder head cover. (Page 1D-16)

Cam Chain Tension Adjuster Inspection

BENH23K21406015

Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-17) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-18).

Unlock the ratchet (1), and move the push rod (2) in place to see if it slides smoothly. If any stickiness is noted or ratchet mechanism is faulty, replace the cam chain tension adjuster assembly with a new one.



IG12K1140055-02

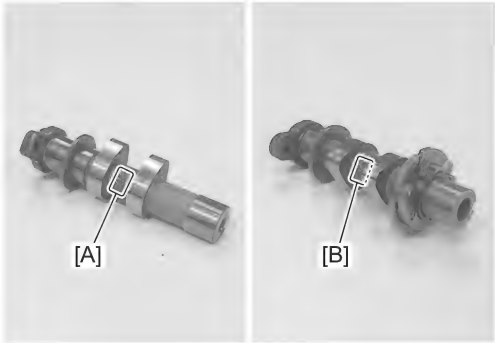
Camshaft Inspection

BENH23K21406016

Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-17) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-18).

Camshaft Identification

The camshafts can be identified by the embossed letter.



IG12K1140056-02

[A]: IN (Intake camshaft)	[B]: EX (Exhaust camshaft)
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Cam Wear

Check the camshaft for wear or damage. Measure the cam height “a” with a micrometer. Replace a camshaft if the cams are worn to the service limit.

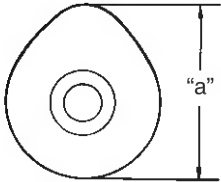
Special tool

09900–20202

Cam height

Intake [Limit]: 34.85 mm (1.372 in)

Exhaust [Limit]: 34.08 mm (1.341 in)



I649G1140199-02

Camshaft Runout

Measure the runout using the dial gauge. Replace the camshaft if the runout exceeds the limit.

Special tool

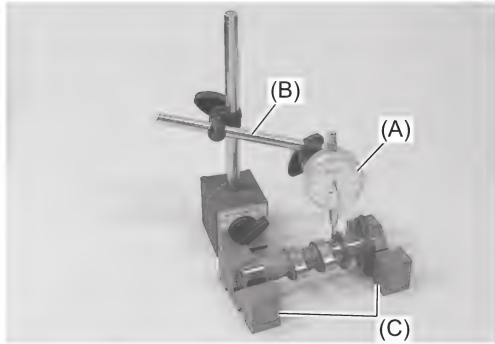
(A): 09900-20607

(B): 09900-20701

(C): 09900-21304

Camshaft runout

Intake & Exhaust [Limit]: 0.10 mm (0.004 in)



IG12K1140057-01

Camshaft Journal Wear

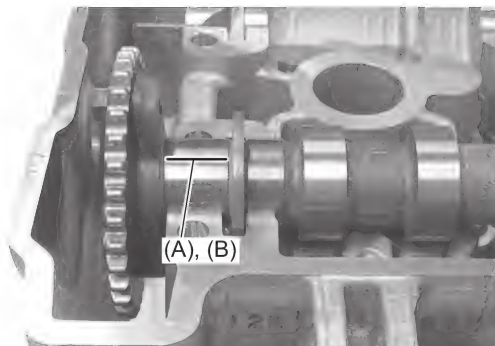
Inspect the camshaft journal wear using the following procedures:

- 1) Determine whether or not each journal is worn down to the limit by measuring the oil clearance with the camshaft installed in place.
- 2) Use the plastigauge to read the clearance at the widest portion, which is specified as follows:

Special tool

(A): 09900-22301

(B): 09900-22302



IG12K1140058-01

- 3) Install camshaft journal holder and tighten the camshaft journal holder bolts in ascending order of numbers to the specified torque. Refer to "Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation" (Page 1D-18).

NOTE

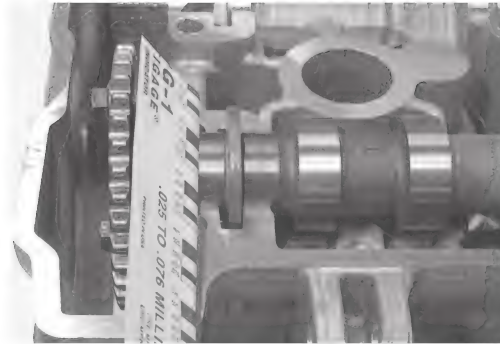
Do not rotate the camshafts with the plastigauge in place.

- 4) Remove the camshaft journal holders and measure the width of the compressed plastigauge using the envelope scale.
- 5) This measurement should be taken at the widest part of the compressed plastigauge.

Camshaft journal oil clearance

Intake [Limit]: 0.150 mm (0.059 in)

Exhaust [Limit]: 0.150 mm (0.059 in)



IG12K1140059-01

- 6) If the camshaft journal oil clearance exceeds the limit, measure the inside diameter of the camshaft journal holder and the outside diameter of the camshaft journal. Replace the camshaft or the cylinder head depending upon which one exceeds the specification.

Special tool

(A): 09900-20602

(B): 09900-22403

(C): 09912-66310

Camshaft journal holder I.D.

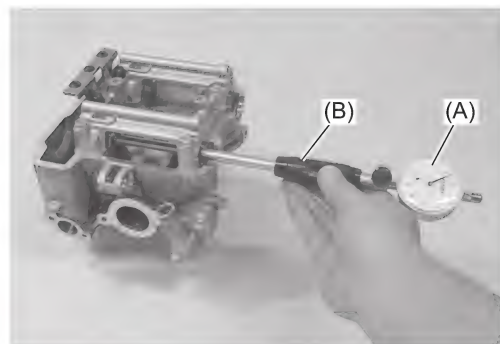
Intake [Standard]: 22.012 – 22.025 mm (0.8667 – 0.8671 in)

Exhaust [Standard]: 22.012 – 22.025 mm (0.8667 – 0.8671 in)

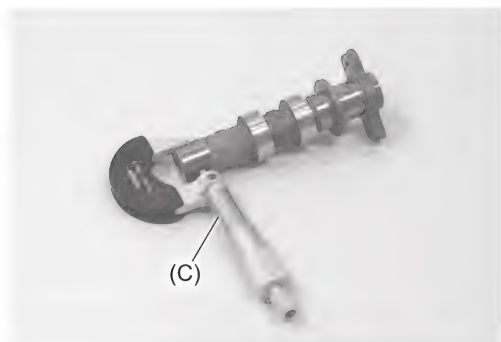
Camshaft journal O.D.

Intake [Standard]: 21.959 – 21.980 mm (0.8646 – 0.8653 in)

Exhaust [Standard]: 21.959 – 21.980 mm (0.8646 – 0.8653 in)



IG12K1140060-01



IG12K1140061-01

Valve Clearance Inspection and Adjustment

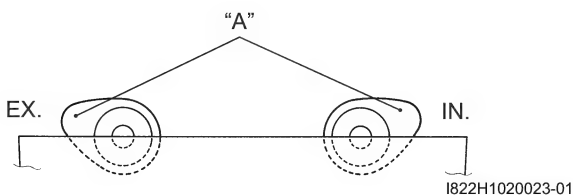
BENH23K21406017

Inspection

Valve clearance adjustment must be checked and adjusted, a) at the time of periodic inspection, b) when the valve mechanism is serviced, and c) when the camshafts are removed for servicing.

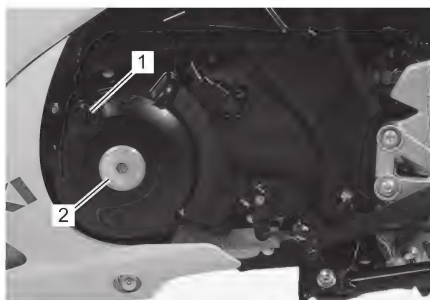
NOTE

- The cam must be at position “A”, when checking or adjusting the valve clearance. Clearance readings should not be taken with the cam in any other position than this position.
- The clearance specification is for COLD state.
- To turn the crankshaft for valve clearance checking, be sure to use a wrench, and rotate in the normal running direction.



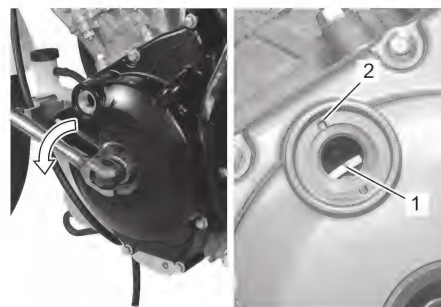
I822H1020023-01

- 1) Remove the valve timing inspection plug (1) and generator cover plug (2).

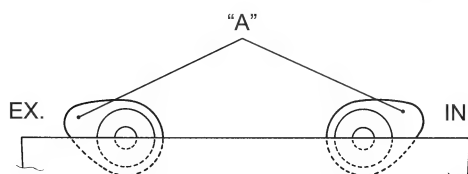


IH23K1140035-02

- 2) Turn the crankshaft to bring the “TDC” line (1) on the generator rotor to the index mark (2) on the generator cover and also to bring the both camshafts (EX and IN) to the positions “A” as shown in the figure.).



IH23K1140034-03



I822H1020023-01

- 3) Measure the valve clearance inserting a thickness gauge between the cam (1) and tappet (2). If the clearance is out of specification, adjust the clearance.

Special tool

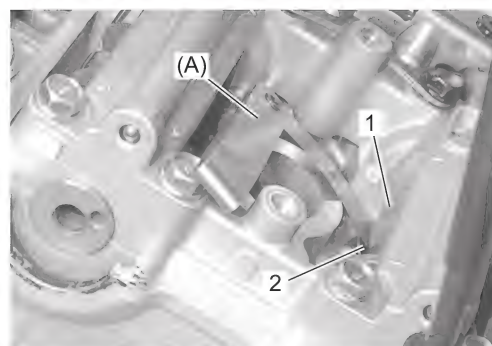
(A): 09900-20803

Valve clearance

When engine cold

Intake [Standard]: 0.10 – 0.20 mm (0.0040 – 0.0078 in)


Exhaust [Standard]: 0.20 – 0.30 mm (0.0079 – 0.0118 in)

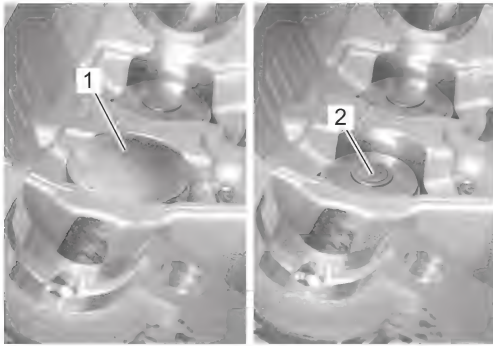


IG12K1140062-01

Adjustment

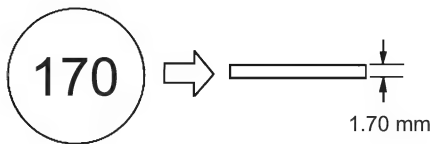
The clearance is adjusted by replacing the existing tappet shim with a thicker or thinner shim.

- 1) Remove the intake or exhaust camshaft.  (Page 1D-17)
- 2) Remove the tappet (1) and shim (2) by fingers or magnetic hand.



IG12K1140063-01

- 3) Check the figures printed on the shim. These figures indicate the thickness of the shim, as illustrated.

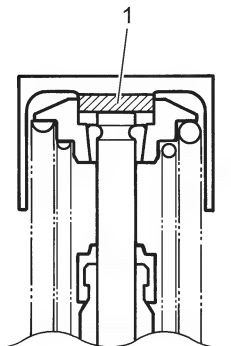


I837H1020014-01

- 4) Select a replacement shim that will provide a clearance within the specified range. For the purpose of this adjustment, a total of 21 sizes of tappet shim are available ranging from 1.20 to 2.20 mm in steps of 0.05 mm.
- 5) Fit the selected shim (1) to the valve stem end, with numbers toward tappet. Be sure to check shim size with micrometer to ensure its size.

NOTE

- Be sure to apply engine oil to tappet shim top and bottom faces.
- When seating the tappet shim, be sure the figure printed surface faces the tappet.



IF04K1140319-01

INTAKE SIDE

TAPPET SHIM SELECTION TABLE [INTAKE]
TAPPET SHIM NO. (12892-05C00-XXX)

TAPPET SHIM SET (12800-05830)

MEASURED VALVE CLEARANCE (mm)		SUFFIX NO.	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
			PRESENT VALVE SHIM SIZE (mm)	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15
0.00-0.04					1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10
0.05-0.09				1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15
0.10-0.20																							
0.21-0.25			1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20	
0.26-0.30			1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20		
0.31-0.35			1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20			
0.36-0.40			1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20				
0.41-0.45			1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20					
0.46-0.50			1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20						
0.51-0.55			1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20							
0.56-0.60			1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20								
0.61-0.65			1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20									
0.66-0.70			1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20										
0.71-0.75			1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20											
0.76-0.80			1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20												
0.81-0.85			1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20													
0.86-0.90			1.95	2.00	2.05	2.10	2.15	2.20	2.20														
0.91-0.95			2.00	2.05	2.10	2.15	2.20	2.20															
0.96-1.00			2.05	2.10	2.15	2.20	2.20																
1.01-1.05			2.10	2.15	2.20	2.20																	
1.06-1.10			2.15	2.20	2.20																		
1.11-1.15			2.20	2.20																			

HOW TO USE THIS CHART:

I.

Measure valve clearance. “ENGINE IS COLD”

II.

Measure present shim size.

III.

Match clearance in vertical column with present shim size in horizontal column.

HOW TO USE THIS CHART:

- I. Measure valve clearance. "ENGINE IS COLD"
- II. Measure present shim size.
- III. Match clearance in vertical column with present shim size in horizontal column.

EXAMPLE

Valve clearance is	0.23 mm
Present shim size	1.70 mm
Shim size to be used	1.80 mm

TAPPET SHIM SELECTION TABLE [EXHAUST]
TAPPET SHIM NO. (12892-05C00-XXX)

TAPPET SHIM SET (12800-05830)

MEASURED VALVE CLEARANCE (mm)		SUFFIX NO.	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	
			PRESENT SHIM SIZE (mm)	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20
0.05-0.09						1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	
0.10-0.14				1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	
0.15-0.19			1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	
0.20-0.30																								
SPECIFIED CLEARANCE/NO ADJUSTMENT REQUIRED																								
0.31-0.35			1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20			
0.36-0.40			1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20				
0.41-0.45			1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20					
0.46-0.50			1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20						
0.51-0.55			1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20							
0.56-0.60			1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20								
0.61-0.65			1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20									
0.66-0.70			1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20										
0.71-0.75			1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20											
0.76-0.80			1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20												
0.81-0.85			1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20													
0.86-0.90			1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20														
0.91-0.95			1.90	1.95	2.00	2.05	2.10	2.15	2.20															
0.96-1.00			1.95	2.00	2.05	2.10	2.15	2.20																
1.01-1.05			2.00	2.05	2.10	2.15	2.20																	
1.06-1.10			2.05	2.10	2.15	2.20																		
1.11-1.15			2.10	2.15	2.20																			
1.16-1.20			2.15	2.20																				
1.21-1.25			2.20																					

HOW TO USE THIS CHART:

I.

Measure valve clearance. “ENGINE IS COLD”

II.

Measure present shim size.

III.

Match clearance in vertical column with present shim size in horizontal column.

EXAMPLE


HOW TO USE THIS CHART:

- I. Measure valve clearance. "ENGINE IS COLD"
- II. Measure present shim size.
- III. Match clearance in vertical column with present shim size in horizontal column.

EXAMPLE

Valve clearance is 0.33 mm
Present shim size is 1.70 mm
Shim size to be used is 1.80 mm


1D-28 Engine Mechanical:

- 6) Install the camshafts and cam chain tension adjuster.  (Page 1D-18)
- 7) Rotate the engine so that the tappet is depressed fully. This will squeeze out oil trapped between the shim and the tappet that could cause an incorrect measurement. Then check the clearance again to confirm that it is within the specified range.
- 8) After finishing the tappet clearance adjustment, check that the engine starts smoothly and is free from any abnormal noise.

Camshaft Sprocket Inspection

BENH23K21406018

Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-17) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-18).

Check the camshaft sprocket teeth for wear or damage. If any defects are found, replace the camshaft sprocket and cam chain as a set.  (Page 1D-42)







IG12K1140073-01

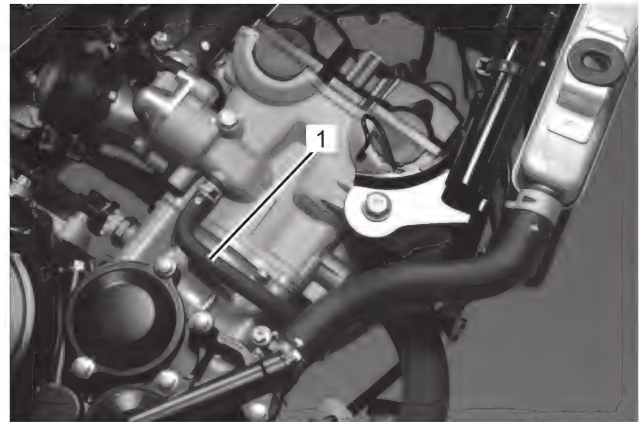
Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation

BENH23K21406019

Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-17) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-18).

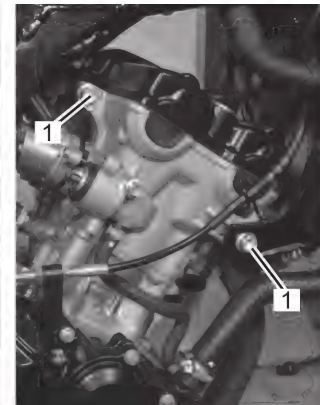
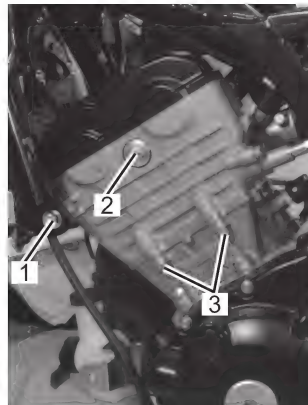
Removal

- 1) Remove the following parts.
 - Muffler:  (Page 1K-2)
 - Intake pipe:  (Page 1D-15)
 - Radiator:  (Page 1F-8)
 - Intake and exhaust camshafts:  (Page 1D-24)
- 2) Remove the water bypass hose (1).



IH23K1140055-03

- 3) Remove the engine mounting bolts (1) and bolt (2).
- 4) Remove the cylinder head nuts (3).



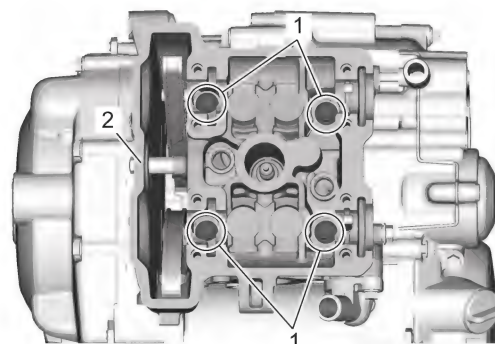
IH23K1140056-02

- 5) Remove the cylinder head bolts (1) and washers.

NOTE

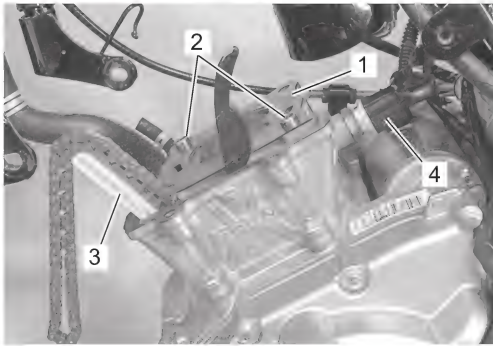
Be sure to loosen the cylinder head bolts (M8) evenly and in a crisscross pattern.

- 6) Remove the cylinder head (2) assembly.



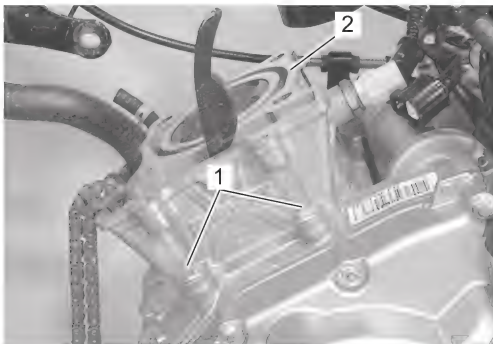
IG12K1140076-02

- 7) Remove the cylinder head gasket (1), dowel pins (2) and chain guide No.1 (3).
- 8) Disconnect the ECT sensor coupler (4).



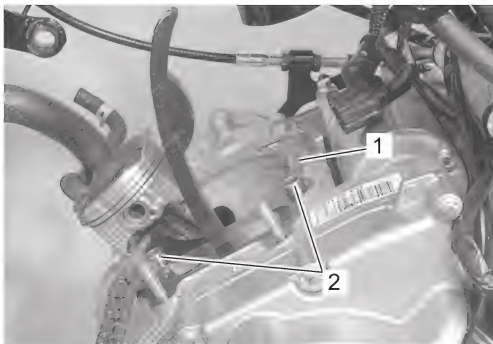
IG12K1140075-02

- 9) Remove the cylinder nuts (1) and then remove the cylinder (2).



IG12K1140070-02

- 10) Remove the cylinder gasket (1) and dowel pins (2).

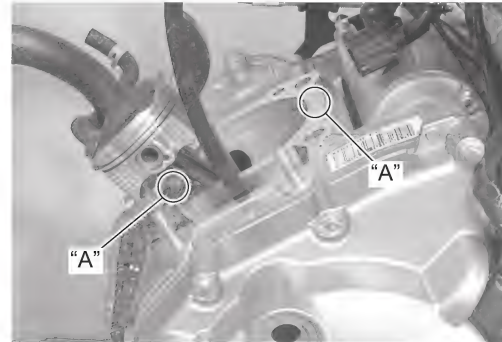


IG12K1140071-02

Installation

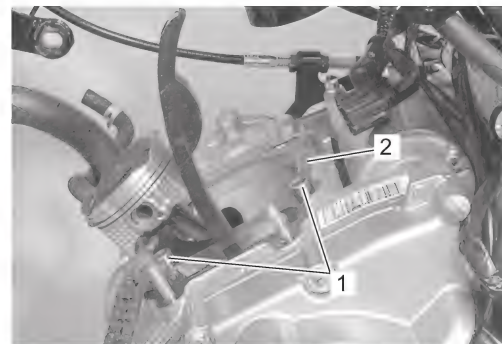
- 1) Thoroughly wipe off oil from the fitting surface of the crankcase.
- 2) Coat sealant lightly to the mating surfaces at the parting line between the right and left crankcases as shown.

"A": Sealant 99000-31110 (SUZUKI BOND 1215)



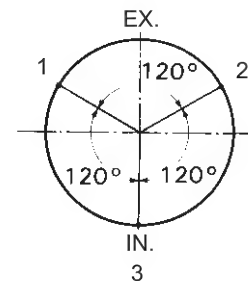
IG12K1140078-02

- 3) Install the dowel pins (1) and new cylinder gasket (2).



IG12K1140079-02

- 4) Position the gaps of the three rings and side rails as shown.

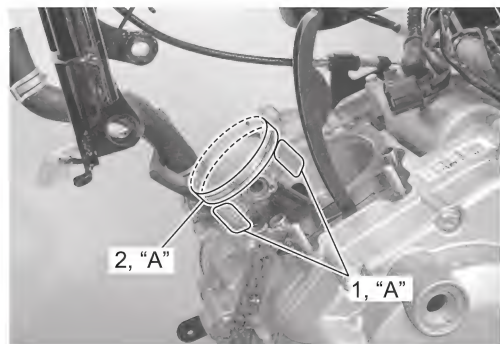


ID26J1140121-04

1.	2nd ring and lower side rail
2.	Upper side rail
3.	1st ring and spacer

- 5) Apply molybdenum oil to the sliding surface of the piston (1), piston rings (2) and cylinder wall.

“A”: Assembly lubrication (Molybdenum oil solution)

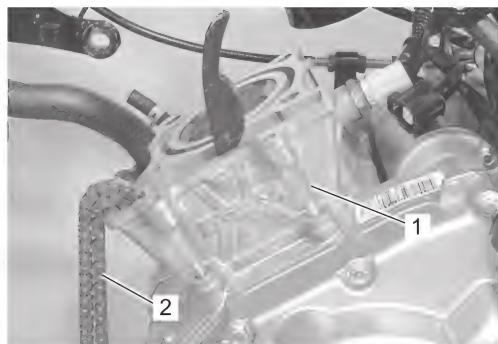


IG12K1140080-04

- 6) Hold the piston rings in proper positions, and insert the piston into the cylinder (1). (Page 1D-39)

NOTE

- When inserting the piston into the cylinder, take care not to bend the piston rings.
- When installing the cylinder, keep the cam chain (2) taut.

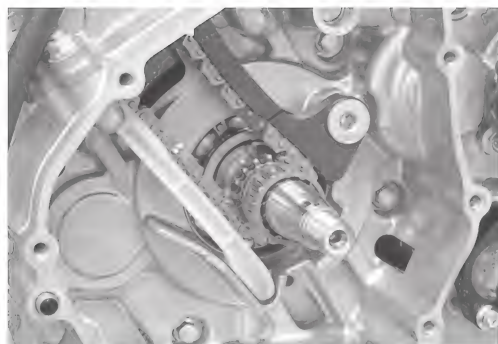


IG12K1140081-02

- 7) Install the cam chain guide No.1 (1).

NOTE

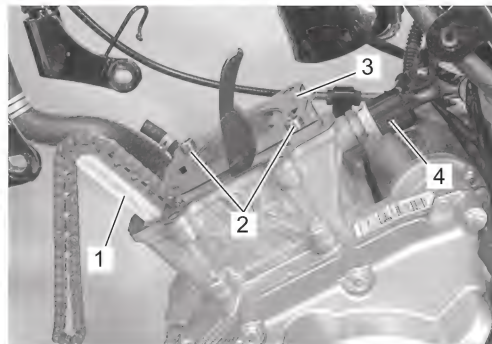
There is a guide holder at the bottom of the cam chain guide cast in the crankcase. Be sure that the cam chain guide is inserted to the holder properly.



IG12K1140082-02

- 8) Install the dowel pins (2) and new cylinder head gasket (3).

- 9) Connect the ECT sensor coupler (4).



IG12K1140083-02

- 10) Place the cylinder head assembly on the cylinder.

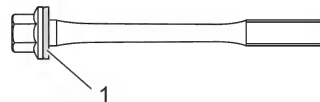
NOTE

When installing the cylinder head, keep the cam chain taut.

- 11) Apply engine oil to the both side of the cylinder head bolt washers (1) before installing.

NOTE

The rounded side of the washer should be positioned upside.



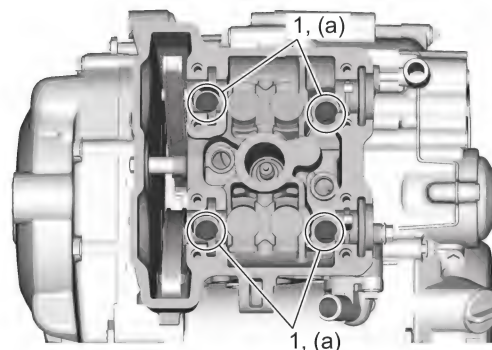
IG12K1140167-01

- 12) Tighten the cylinder head bolts (1) according to the following procedure:

- Tighten cylinder head bolts to 17 N·m (1.7 kgf-m, 12.5 lbf-ft) in diagonally.
- Retighten them to 25 N·m (2.5 kgf-m, 18.5 lbf-ft) in the same manner as in Step a).

Tightening torque

Cylinder head bolt (a): 17 N·m → 25 N·m (1.7 kgf-m → 2.5 kgf-m, 12.5 lbf-ft → 18.5 lbf-ft)



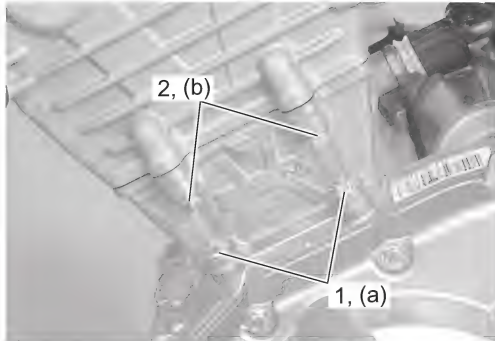
IG12K1140125-02

- 13) Tighten the cylinder nuts (1) and cylinder head nuts (2) to the specified torque.

Tightening torque

Cylinder nut (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Cylinder head nut (b): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

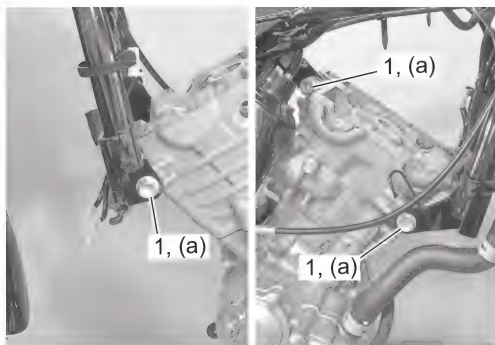


IG12K1140084-02

- 14) Install the engine mounting bolts (1) and tighten the bolts to the specified torque.

Tightening torque

Engine mounting bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

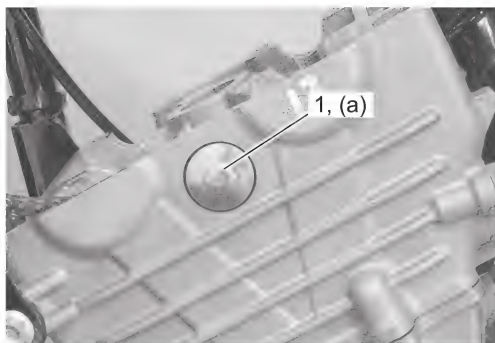


IG12K1140085-02

- 15) Apply engine oil to a new gasket and tighten bolt (1) to the specified torque.

Tightening torque

Bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IG12K1140086-03

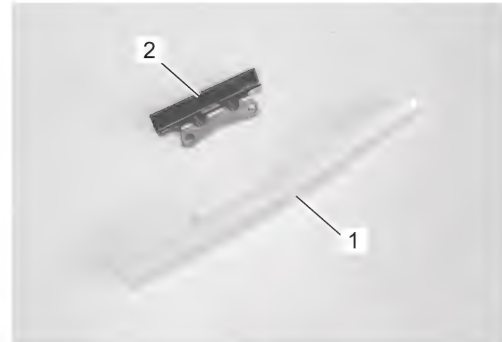
- 16) Install the removed parts.

Cam Chain Guide Inspection

BENH23K21406020

Refer to "Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal" (Page 1D-17) and "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-28).

Check the contacting surface of the cam chain guides. If it is worn or damaged, replace it with a new one.



IG12K1140087-03

1. Cam chain guide No.1

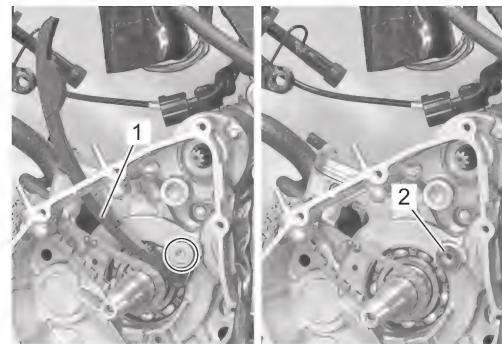
2. Cam chain guide No.2

Cam Chain Tensioner Removal and Installation

BENH23K21406021

Removal

- 1) Remove the cylinder. ☞ (Page 1D-28)
- 2) Remove the generator rotor. ☞ (Page 1J-5)
- 3) Remove the cam chain tensioner (1) and washer (2).



IG12K1140088-02

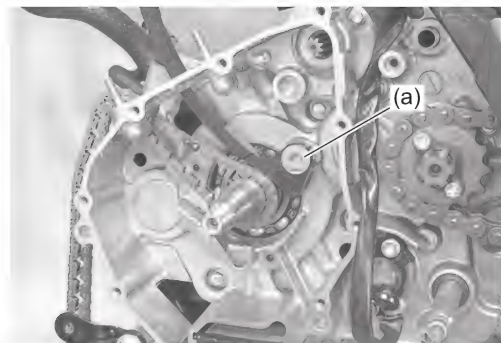
Installation

Install the cam chain tensioner in the reverse order of removal. Pay attention to the following point:

- Tighten the cam chain tensioner bolt to the specified torque.

Tightening torque

Cam chain tensioner bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IG12K1140089-02

Cam Chain Tensioner Inspection

BENH23K21406022

Refer to "Cam Chain Tensioner Removal and Installation" (Page 1D-31).

Check the contacting surface of the cam chain tensioner. If it is worn or damaged, replace it with a new one.



IG12K1140090-02

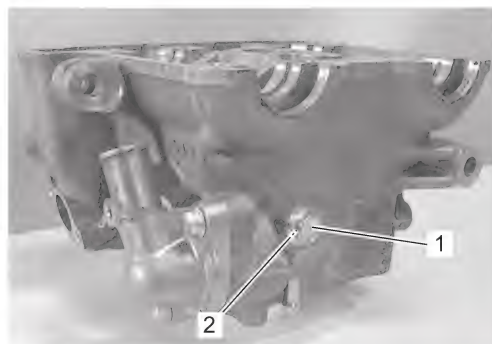
Cylinder Head Disassembly and Reassembly

BENH23K21406023

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-28).

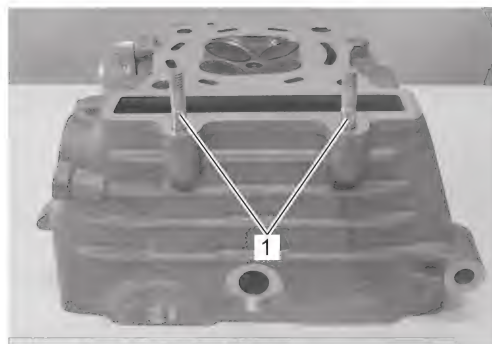
Disassembly

- 1) Remove the thermostat cover and thermostat.
(Page 1F-12)
- 2) Remove the bolt (1) and gasket (2).



IG12K1140091-03

- 3) Remove the stud bolts (1).

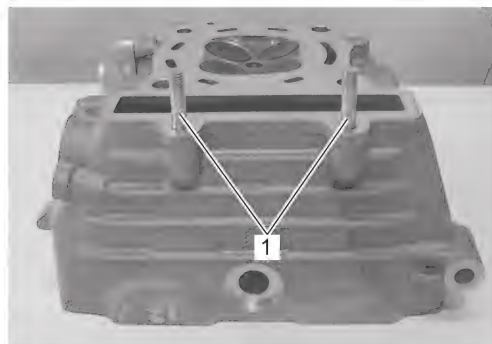


IG12K1140092-02

- 4) Remove the valves and valve springs. (Page 1D-33)

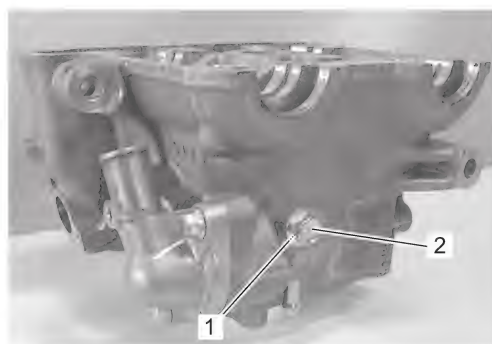
Reassembly

- 1) Install the valves and valve springs. (Page 1D-33)
- 2) Install the stud bolts (1).



IG12K1140092-02

- 3) Install a new gasket (1) to the bolt (2), and then tighten the bolt.



IG12K1140093-02

Cylinder Head Inspection

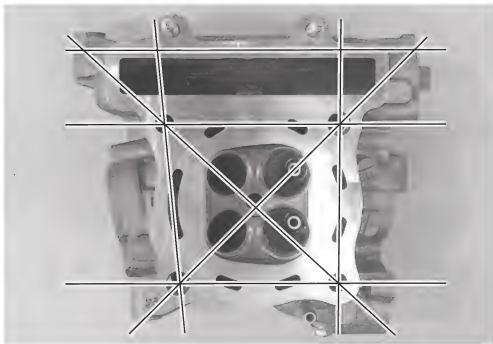
BENH23K21406024

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-28).

- 1) Decarbonize the combustion chamber.
- 2) Check the gasket surface of the cylinder head for distortion with a straightedge and thickness gauge, taking a clearance reading at several places as indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder head.

Special tool
09900-20803

Cylinder head distortion
[Limit]: 0.05 mm (0.002 in)



IG12K1140094-02

Valve / Valve Spring Removal and Installation

BENH23K21406025

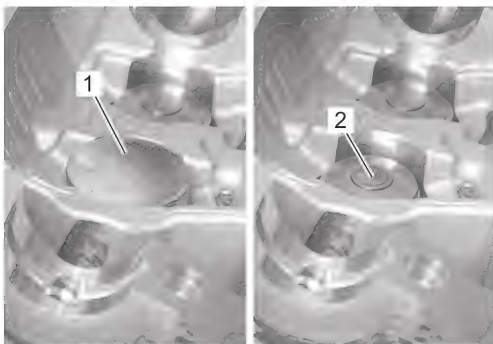
Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-28).

NOTICE

Identify the position of each removed part.
Organize the parts so that they can be reinstalled in their original positions.

Removal

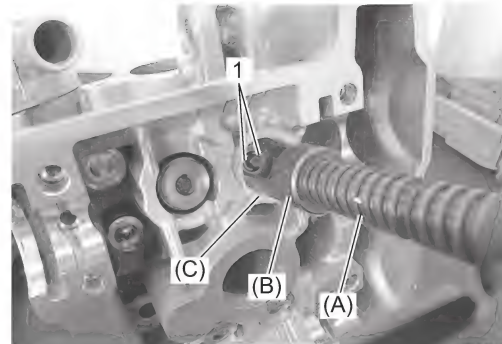
- 1) Remove the tappet (1) and shim (2) by fingers or magnetic hand.



IG12K1140063-01

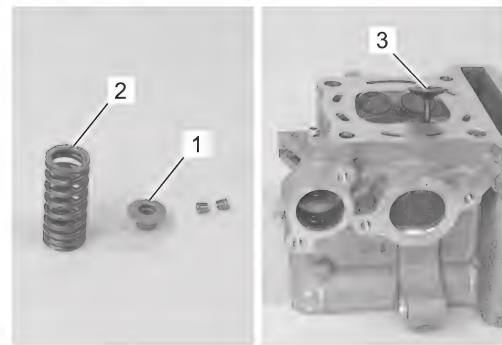
- 2) Using the special tools, compress the valve spring and remove the two cotter halves (1) from the valve stem.

Special tool
(A): 09916-14510
(B): 09916-14530
(C): 09919-28610
09916-84511



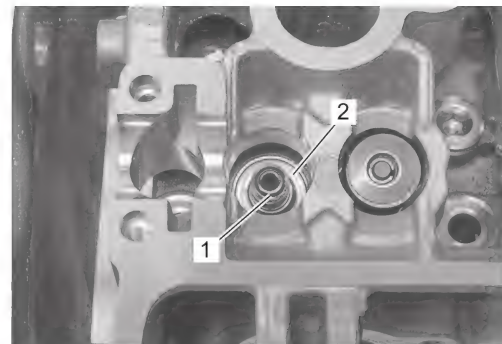
IG12K1140095-03

- 3) Remove the valve spring retainer (1) and valve spring (2).
- 4) Pull out the valve (3) from the combustion chamber side.



IG12K1140096-03

- 5) Remove the oil seal (1) and spring seat (2).



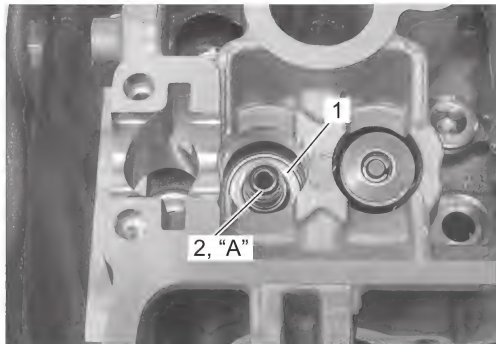
IG12K1140097-02

- 6) Remove the other valves in the same manner as described previously.

Installation

- 1) Install the valve spring seat (1).
- 2) Apply molybdenum oil solution to a new oil seal (2), and press-fit it into position.

“A”: Assembly lubrication (Molybdenum oil solution)



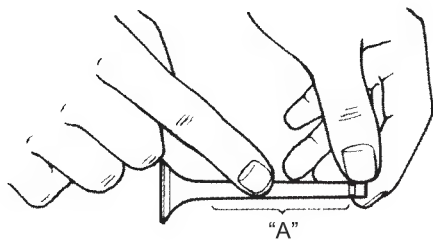
IG12K1140098-03

- 3) Insert the valve, with its stem coated with molybdenum oil solution all around and along the full stem length without any break.

NOTICE

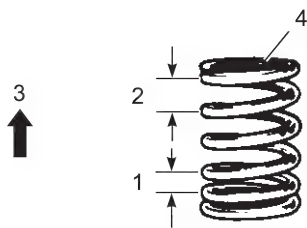
When inserting the valve, take care not to damage the lip of the oil seal.

“A”: Assembly lubrication (Molybdenum oil solution)



ID26J1140087-01

- 4) Install the valve spring with the small-pitch portion (1) facing cylinder head.



ID26J1140274-03

2. Large-pitch portion	4. Paint
3. Upward	

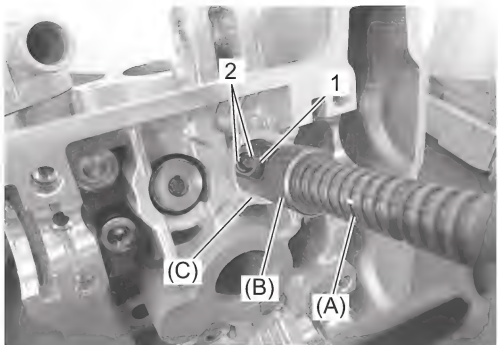
- 5) Put on the valve spring retainer (1), and using the special tools, press down the spring, fit the cotter halves (2) to the stem end, and release the lifter to allow the cotter halves to wedge in between retainer and stem.

NOTICE

- Be sure to restore each spring and valve to their original positions.
- Be careful not to damage the valve and valve stem when handling it.
- Compressing of the valve spring must be restricted to the extent only necessary to prevent the spring from fatigue.

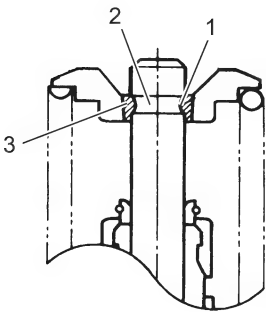
Special tool

- (A): 09916-14510
(B): 09916-14530
(C): 09919-28610
09916-84511



IG12K1140099-03

- 6) Be sure that the rounded lip (1) of the cotter (3) fits snugly into the groove (2) in the stem end.

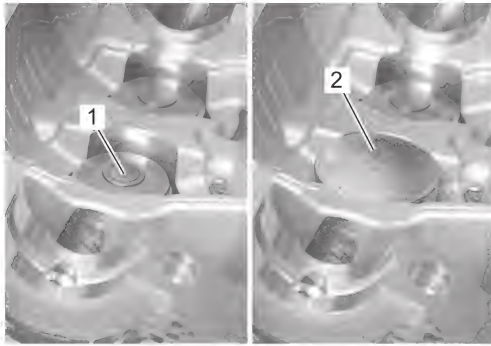


IE12J1140082-01

- 7) Apply engine oil to the stem ends and tappet shims (1).
- 8) Apply engine oil to the tappets (2).
- 9) Install the tappet shims and the tappets to their original positions.

NOTE

When seating the tappet shim, be sure the figure printed surface faces the tappet.



IG12K1140100-02

Valve Inspection

BENH23K21406026

Refer to "Valve / Valve Spring Removal and Installation" (Page 1D-33).

Valve Stem Runout

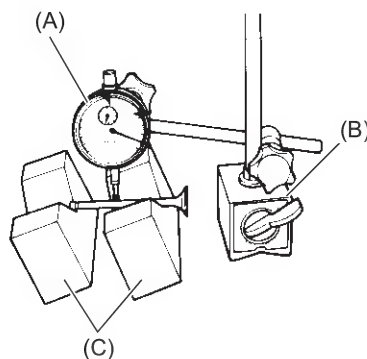
Support the valve using V-blocks, and check its runout using the dial gauge as shown in the figure. If the runout exceeds the service limit, replace the valve.

Special tool

- (A): 09900-20607
(B): 09900-20701
(C): 09900-21304

Valve stem runout

Intake & Exhaust [Limit]: 0.05 mm (0.002 in)



ID26J1140091-01

Valve Head Radial Runout

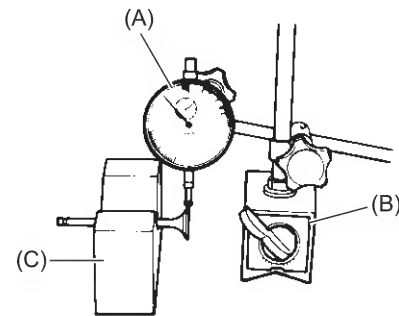
Place the dial gauge at a right angle to the valve head face and measure the valve head radial runout. If it measures more than the service limit, replace the valve.

Special tool

- (A): 09900-20607
(B): 09900-20701
(C): 09900-21304

Valve head radial runout

Intake & Exhaust [Limit]: 0.03 mm (0.001 in)



ID26J1140092-01

Valve Face Wear

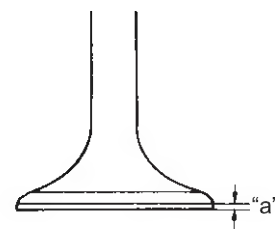
Visually inspect each valve face for wear. Replace any valve with an abnormally worn face. The thickness of the valve face decreases as the face wears. Measure the valve head "a". If it is out of specification replace the valve with a new one.

Special tool

09900-20102

Valve head thickness

Intake [Limit]: 0.5 mm (0.019 in)
Exhaust [Limit]: 0.5 mm (0.019 in)



IF34J1140162-01

Valve Stem Wear

Measure the valve stem O.D. using the micrometer.
If the valve stem is worn down to the limit, as measured with a micrometer, replace the valve.

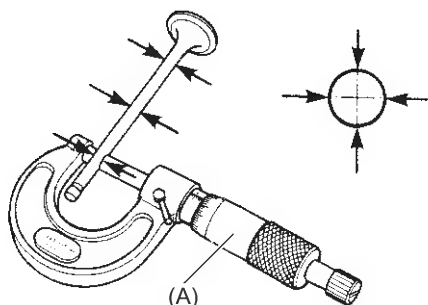
Special tool

(A): 09912-66310

Valve stem O.D.

Intake [Standard]: 4.475 – 4.490 mm (0.1762 – 0.1767 in)

Exhaust [Standard]: 4.455 – 4.470 mm (0.1754 – 0.1759 in)



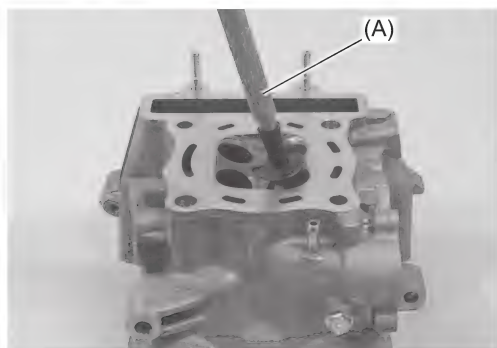
ID26J1140094-01

Valve Seat Width

- 1) Visually check for valve seat width on each valve face. If the valve face has worn abnormally, replace the valve.
- 2) Coat the valve seat with a red lead (Prussian Blue) and set the valve in place.
- 3) Rotate the valve with light pressure.

Special tool

(A): 09916-10911



IG12K1140101-02

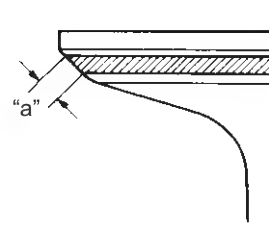
- 4) Check that the transferred red lead (Blue) on the valve face is uniform all around and in center of the valve face.

If the seat width "a" measured exceeds the standard value, or seat width is not uniform reface the seat using the seat cutter. (Page 1D-37)

Valve seat width

Intake [Standard]: 0.9 – 1.1 mm (0.036 – 0.043 in)

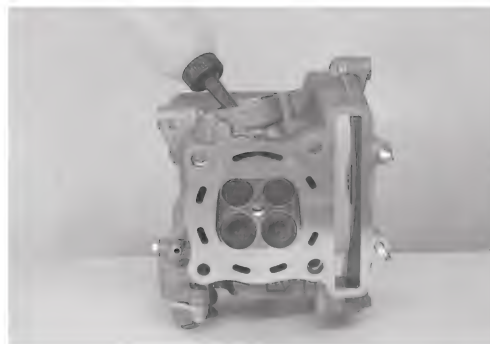
Exhaust [Standard]: 1.0 – 1.2 mm (0.040 – 0.047 in)



IF34J1140163-01

Valve Seat Sealing Condition

- 1) Clean and assemble the cylinder head and valve components.
- 2) Fill the intake and exhaust ports with gasoline to check for leaks. If any leaks occur, inspect the valve seat and face for burrs or other things that could prevent the valve from sealing. (Page 1D-37)



IG12K1140126-01

Valve Spring Inspection

BENH23K21406027

Refer to "Valve / Valve Spring Removal and Installation" (Page 1D-33).

The force of the coil spring keeps the valve seat tight. Weakened spring results in reduced engine power output and often accounts for the chattering noise coming from the valve mechanism.

Check the valve springs for proper strength by measuring its free length and also by the force required to compress it. If the spring length is less than the service limit or if the force required to compress the spring does not fall within the range specified, replace spring as a set.

Special tool

(A): 09900-20102

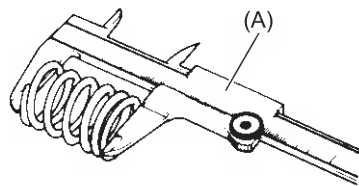
Valve spring free length

Intake & Exhaust [Limit]: 41.75 mm (1.644 in)

Valve spring pre-load

When compressed to 38.10 mm (1.500 in)

Intake & Exhaust [Standard]: 138.7 – 159.5 N (14.2 – 16.2 kg, 31.2 – 35.8 lbf)



ID26J1140098-01



ID26J1140263-01

Valve Seat Repair

BENH23K21406028

Refer to "Valve / Valve Spring Removal and Installation" (Page 1D-33).

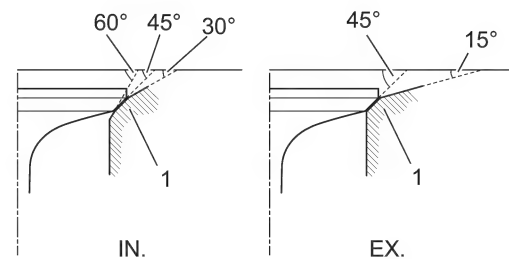
The valve seats (1) for intake and exhaust valves are machined to two or three different angles. The seat contact surface is cut at 45°.

NOTICE

- The valve seat contact area must be inspected after each cut.
- Do not use lapping compound after the final cut is made. The finished valve seat should have a velvety smooth finish but not a highly polished or shiny finish. This will provide a soft surface for the final seating of the valve which will occur during the first few seconds of engine operation.

NOTE

After servicing the valve seats, be sure to check the valve clearance after the cylinder head has been installed. (Page 1D-24)



IG12K1140102-01

	Intake	Exhaust
Seat angle	30°/45°/60°	15°/45°
Seat width	0.9 – 1.1 mm (0.035 – 0.043 in)	1.0 – 1.2 mm (0.040 – 0.047 in)
Valve diameter	24 mm (0.94 in)	21 mm (0.83 in)
Valve guide I.D.	4.500 – 4.512 mm (0.1772 – 0.1776 in)	←

Cylinder Inspection

BENH23K21406029

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-28).

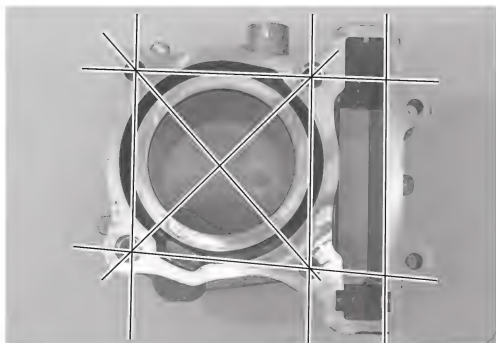
Cylinder Distortion

Check the gasket surface of the cylinder for distortion with a straightedge and thickness gauge, taking a clearance reading at several places as indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder.

Special tool
09900-20803

Cylinder distortion

[Limit]: 0.05 mm (0.002 in)



IG12K1140103-02

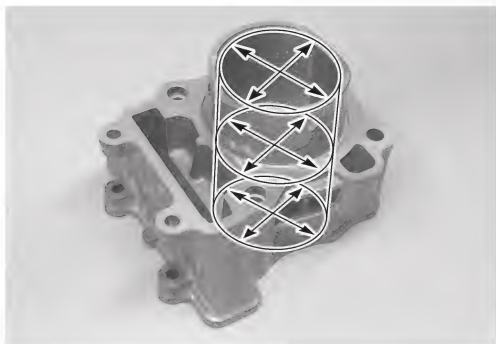
Cylinder Bore

Check the cylinder wall for any scratches, nicks or other damage. Measure the cylinder bore diameter at six places.

Special tool
09900-20530

Cylinder bore

[Standard]: 62.000 – 62.015 mm (2.4410 – 2.4415 in)



IG12K1140104-02

Piston Removal and Installation

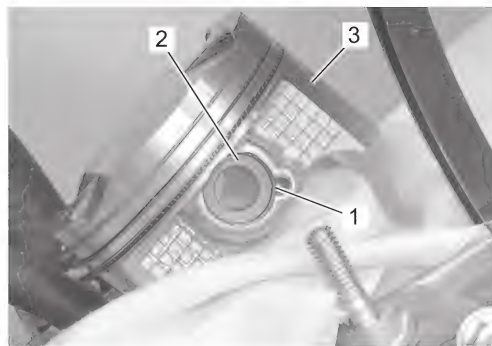
BENH23K21406030

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-28).

Removal

- 1) Place a clean rag over the cylinder base so as not to drop the piston pin circlip (1) into the crankcase.
- 2) Remove the piston pin circlip.

- 3) Draw out the piston pin (2) and remove the piston (3).



IG12K1140105-02

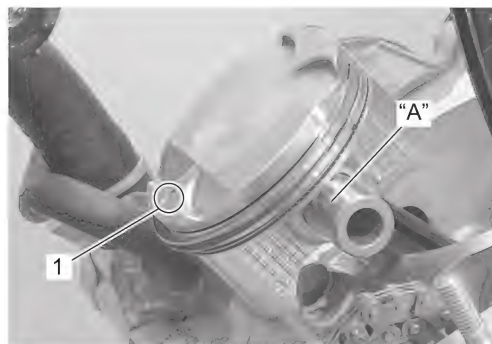
Installation

- 1) When installing the piston, apply molybdenum oil solution onto the piston pin.

NOTE

When installing the piston, the indent (1) on the piston head must be faced to exhaust side.

"A": Assembly lubrication (Molybdenum oil solution)



IG12K1140106-02

- 2) Place a clean rag over the cylinder base so as not to drop the piston pin circlip (1) into the crankcase.
- 3) Install a new piston pin circlip.

NOTE

End gap of the circlip should not be aligned with the cutaway (2) in the piston pin bore.



IG12K1140107-02

Piston Ring Removal and Installation

BENH23K21406031

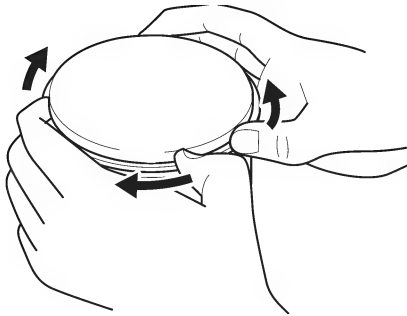
Refer to "Piston Removal and Installation" (Page 1D-38).

Removal

- 1) Carefully spread the ring opening with your thumbs and then push up the opposite side of the 1st ring to remove it.

NOTE

Do not expand the piston ring excessively to avoid breaking the ring.



I831G1140178-01

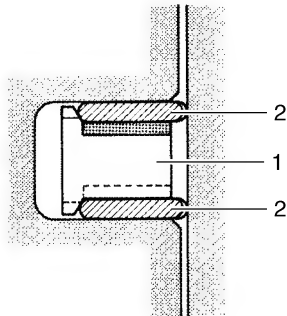
- 2) Remove the 2nd ring and oil ring in the same procedure.

Installation

NOTE

- When installing the piston ring, be careful not to damage the piston.
- Do not expand the piston ring excessively since it is apt to be broken down.

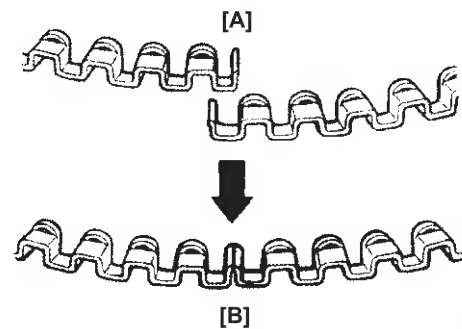
- 1) Install the piston rings in the order of the oil ring, 2nd ring and 1st ring.
 - a) The first member to go into the oil ring groove is a spacer (1).
After placing the spacer, fit the two side rails (2).



IE39J1140163-01

NOTICE

When installing the spacer, be careful not to allow its two ends to overlap in the groove.



IF34J1140094-02

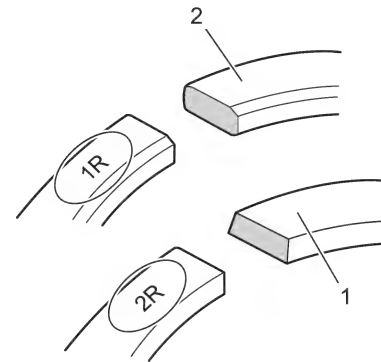
[A]: Incorrect

[B]: Correct

- b) Install the 2nd ring (1) and 1st ring (2) to piston.

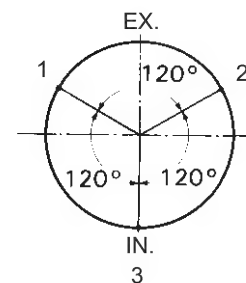
NOTE

- 1st ring and 2nd ring differ in shape.
- Face the side with the stamped mark upward when assembling.



IG12K1140108-02

- 2) Position the gaps of the three rings and side rails as shown. Before inserting piston into the cylinder, check that the gaps are so located.



ID26J1140121-04

- | | |
|----|------------------------------|
| 1. | 2nd ring and lower side rail |
| 2. | Upper side rail |
| 3. | 1st ring and spacer |

Piston and Piston Ring Inspection

BENH23K21406032

Refer to "Piston Ring Removal and Installation" (Page 1D-39).

Piston Diameter

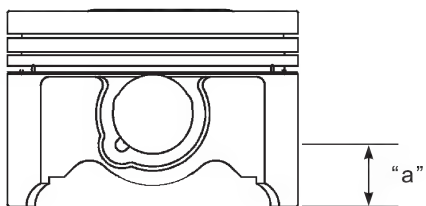
Measure the piston diameter using the micrometer at 12 mm (0.47 in) "a" from the skirt end. If the piston diameter is less than the service limit, replace the piston.

Special tool

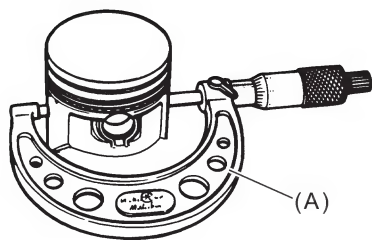
(A): 09900-20203

Piston diameter

[Limit]: 61.850 mm (2.4350 in)



IE12J1140101-01



IE12J1140102-01

Piston to Cylinder Clearance

Subtract the piston diameter from the cylinder bore diameter. If the piston to cylinder clearance exceeds the service limit, replace both the cylinder and the piston.

Piston to cylinder clearance

[Limit]: 0.120 mm (0.0047 in)

Piston Ring to Groove Clearance

Measure the side clearances of the 1st and 2nd piston rings using the thickness gauge. If any of the clearances exceed the limit, replace both the piston and piston rings.

Special tool

(A): 09900-20803

(B): 09912-66310

Piston ring to groove clearance

1st [Limit]: 0.180 mm (0.0071 in)

2nd [Limit]: 0.150 mm (0.0059 in)

Piston ring groove width

1st [Standard]: 0.81 – 0.83 mm (0.0319 – 0.0327 in)

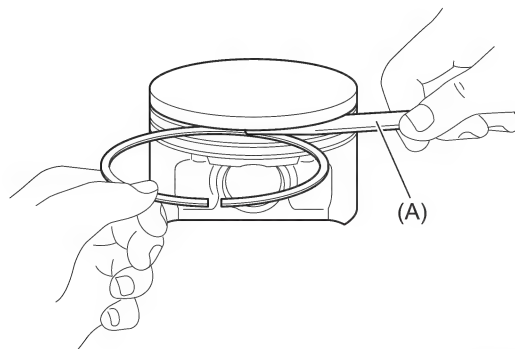
2nd [Standard]: 0.81 – 0.83 mm (0.0319 – 0.0327 in)

Oil [Standard]: 1.51 – 1.53 mm (0.0594 – 0.0602 in)

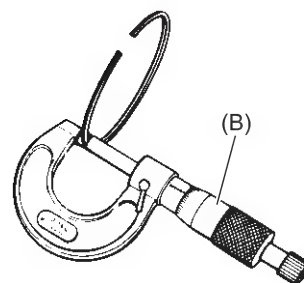
Piston ring thickness

1st [Standard]: 0.77 – 0.79 mm (0.0303 – 0.0311 in)

2nd [Standard]: 0.77 – 0.79 mm (0.0303 – 0.0311 in)



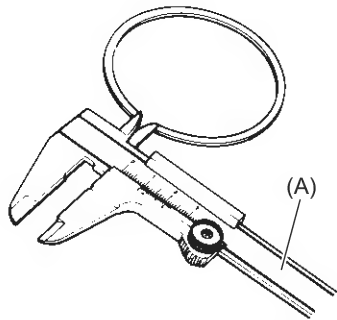
IG12K1140109-02



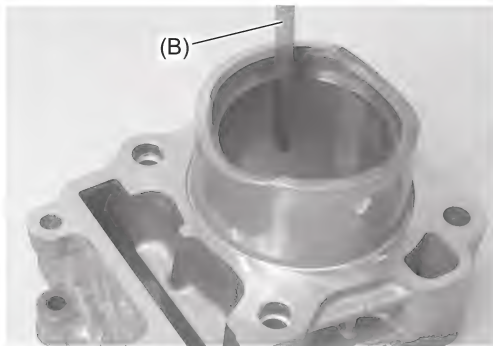
ID26J1140125-01

Piston Ring Free End Gap and Piston Ring End Gap

Measure the piston ring free end gap using vernier calipers. Next, fit the piston ring squarely into the cylinder and measure the piston ring end gap using the thickness gauge. If any of the measurements exceed the service limit, replace the piston ring with a new one.

Special tool**(A): 09900-20102****(B): 09900-20803****Piston ring free end gap****1st [Limit]: 6.8 mm (0.27 in)****2nd [Limit]: 5.0 mm (0.20 in)****Piston ring end gap****1st [Limit]: 0.50 mm (0.020 in)****2nd [Limit]: 0.50 mm (0.020 in)**

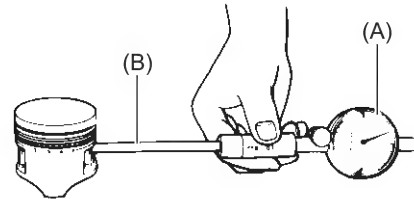
ID26J1140126-02



IG12K1140110-02

Piston Pin Bore

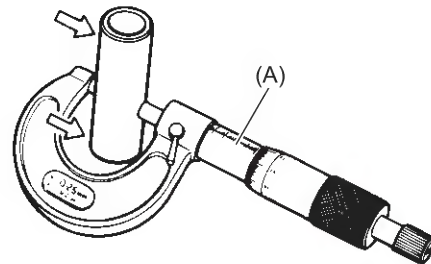
Measure the piston pin bore inside diameter using the small bore gauge. If measurement is out of specification, replace the piston.

Special tool**(A): 09900-20602****(B): 09900-22401****Piston pin bore I.D.****[Limit]: 15.030 mm (0.5917 in)**

ID26J1140128-01

Piston Pin

Measure the piston pin outside diameter at three positions using the micrometer. If any of the measurements are out of specification, replace the piston pin.

Special tool**(A): 09912-66310****Piston pin O.D.****[Limit]: 14.980 mm (0.5898 in)**

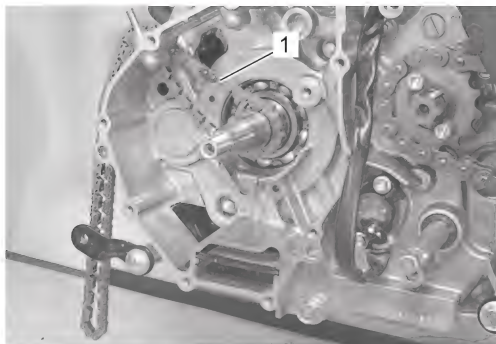
ID26J1140129-01

Cam Chain Removal and Installation

BENH23K21406033

Removal

- 1) Remove the cam chain tensioner. (Page 1D-31)
- 2) Remove the cam chain (1).



IG12K1140111-02

Installation

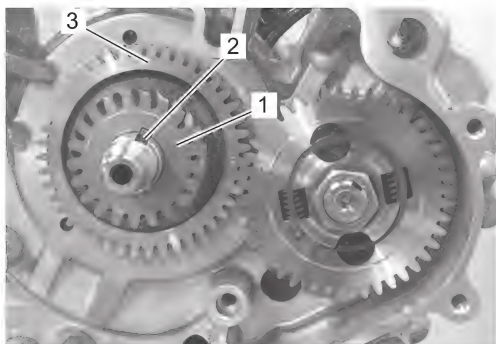
Install the cam chain in the reverse order of removal.

Balancer Shaft Drive / Driven Gear Removal and Installation

BENH23K21406034

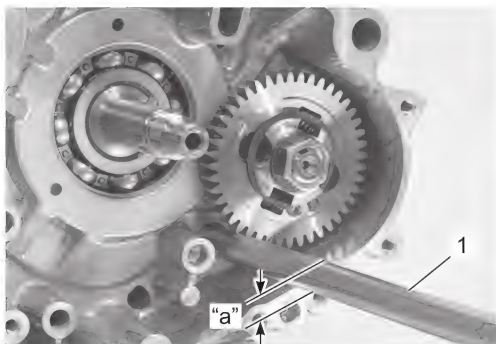
Removal

- 1) Remove the following parts.
 - Clutch component parts: (Page 5C-6)
 - Oil pump component parts: (Page 1E-8)
- 2) Remove the primary drive gear (1), key (2) and balancer shaft drive gear (3).



IG12K1140112-02

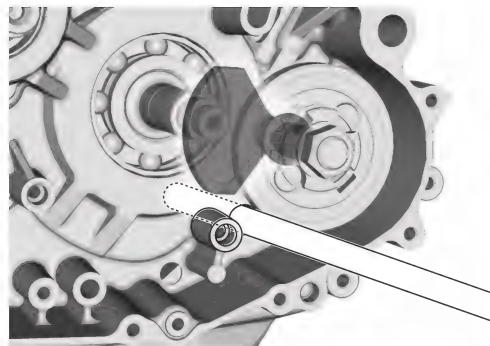
- 3) Install the suitable shaft (1) in order to fix the balancer shaft.



IG12K1140113-02

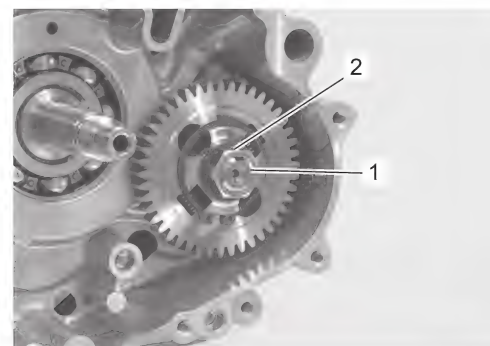
"a": 12.5 – 13.5 mm (0.50 – 0.53 in)

- 4) Check that the balancer shaft is fixed.



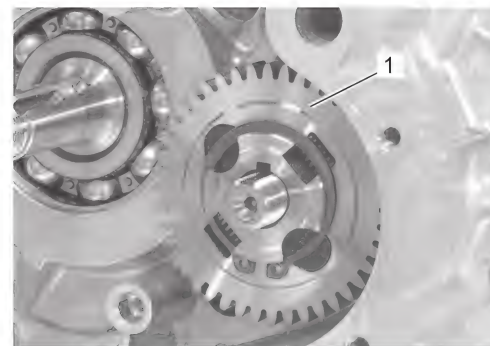
IG12K1140114-02

- 5) Remove the balancer shaft driven gear nut (1) and washer (2).



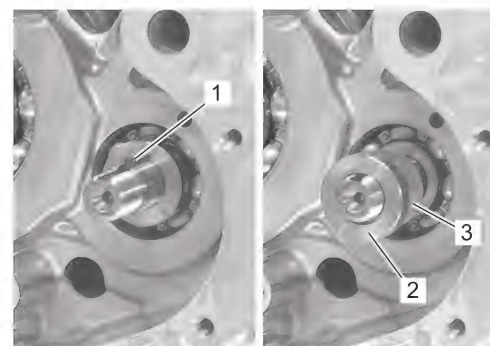
IG12K1140115-02

- 6) Remove the balancer driven gear (1).



IG12K1140116-02

- 7) Remove the key (1), spacer (2) and washer (3).

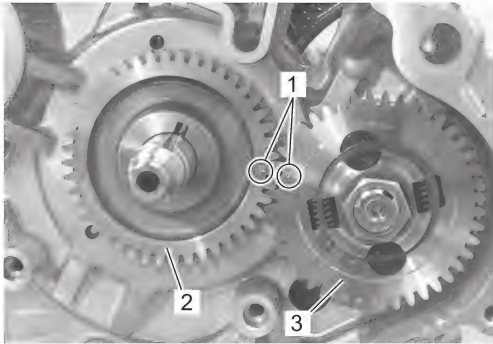


IG12K1140117-02

Installation

Install the balancer shaft drive gear and driven gear in the reverse order of removal. Pay attention to the following points:

- Align the punch marks (1) on the balancer shaft drive gear (2) and balancer shaft driven gear (3).

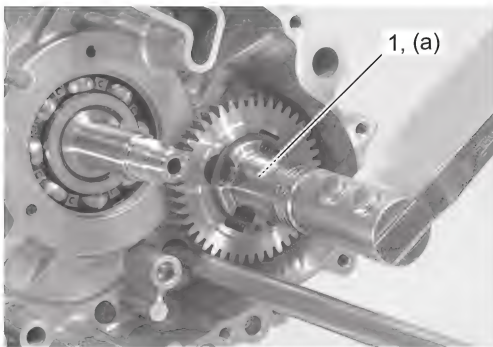


IG12K1140118-02

- Hold the balancer shaft and tighten the balancer shaft driven gear nut (1) to the specified torque.

Tightening torque

Balancer shaft driven gear nut (a): 50 N·m (5.1 kgf-m, 37.0 lbf-ft)



IG12K1140119-02

Balancer Shaft Driven Gear Disassembly and Reassembly

BENH23K21406035

Refer to "Balancer Shaft Drive / Driven Gear Removal and Installation" (Page 1D-42).

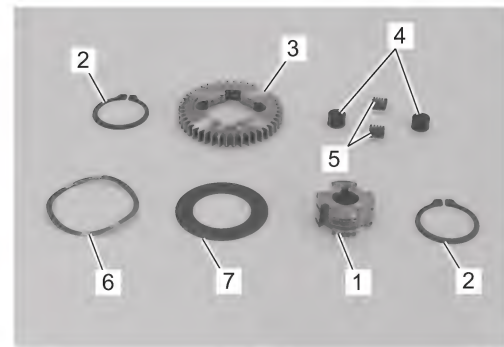
Disassembly

- Remove the following parts from the balancer shaft driven gear inner race (1).

- Snap rings (2)
- Balancer shaft driven gear (3)
- Dampers (4)
- Springs (5)
- Wave washer (6)
- Washer (7)

Special tool

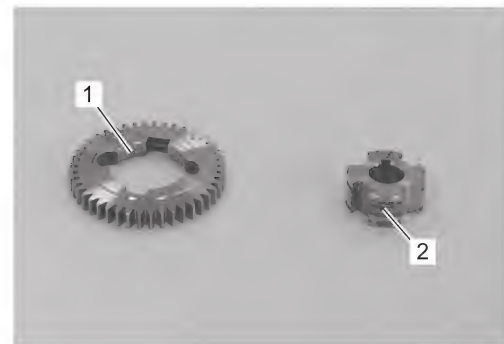
09900-06107



IG12K1140120-03

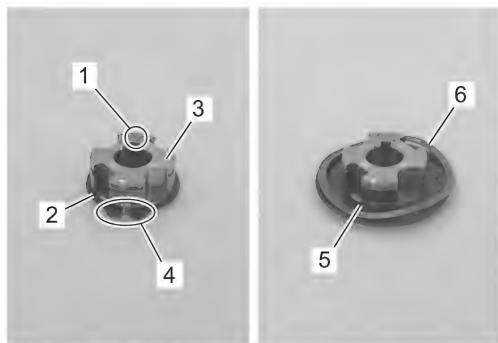
Reassembly

- Apply engine oil to the sliding surfaces of the balancer shaft driven gear (1) and inner race (2).



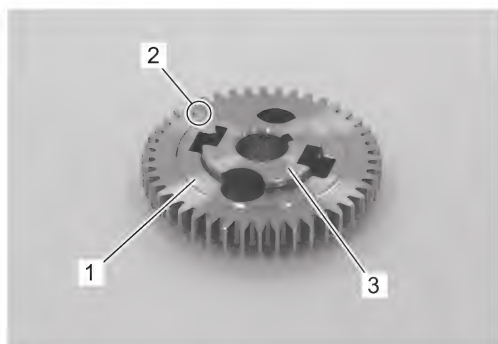
IG12K1140121-03

- 2) Face the punch mark (1) of the balancer shaft driven gear inner race upward.
- 3) Facing the sharp edge side of the snap ring (2) outward, fit it to the balancer shaft driven gear inner race (3). Position the opening (4) of the snap ring in the center of the rib portion as shown in the figure.
- 4) Install the washer (5) and wave washer (6).



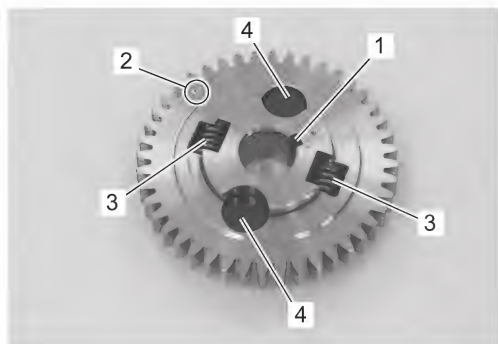
IG12K1140122-05

- 5) Face the punch mark (1) of the balancer shaft driven gear (2) upward, install it to the balancer shaft driven gear inner race (3).



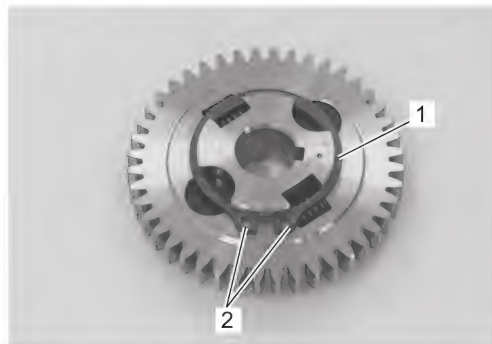
IG12K1140127-02

- 6) Align the cutaway (1) of the balancer shaft driven gear inner race with the punch mark (2) of the balancer shaft driven gear as shown in the figure and install springs (3) and dampers (4).



IG12K1140128-02

- 7) Facing the sharp edge side of the snap ring (1) outward, fit it to the balancer shaft driven gear inner race. Position the opening (2) of the snap ring in the center of the rib portion as shown in the figure.



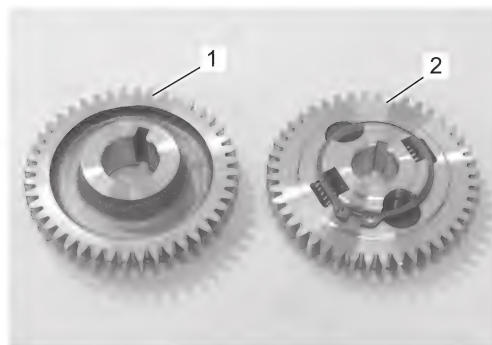
IG12K1140129-02

Balancer Shaft Drive / Driven Gear Inspection

BENH23K21406036

Refer to "Balancer Shaft Drive / Driven Gear Removal and Installation" (Page 1D-42).

Inspect the balancer shaft drive gear (1) and driven gear (2) for wear or damage. If any defects are found, replace them with new ones.



IG12K1140130-01

Engine Assembly Removal

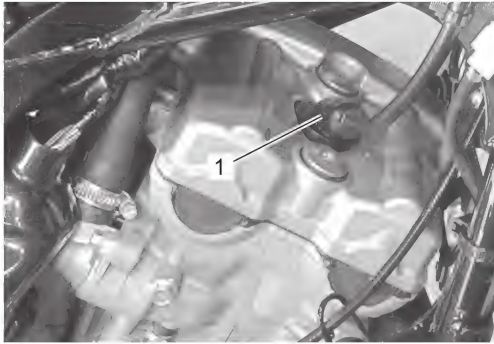
BENH23K21406037

- 1) Disconnect the battery (–) lead wire. Refer to "Battery Removal and Installation" in Section 1J (Page 1J-11).
- 2) Drain engine oil. (Page 1E-5)
- 3) Remove the following parts.
GSX R 150 Model
 - a) Front fairing: (Page 9D-22)
 - b) Frame cover: (Page 9D-30)

GSX S 150 Model

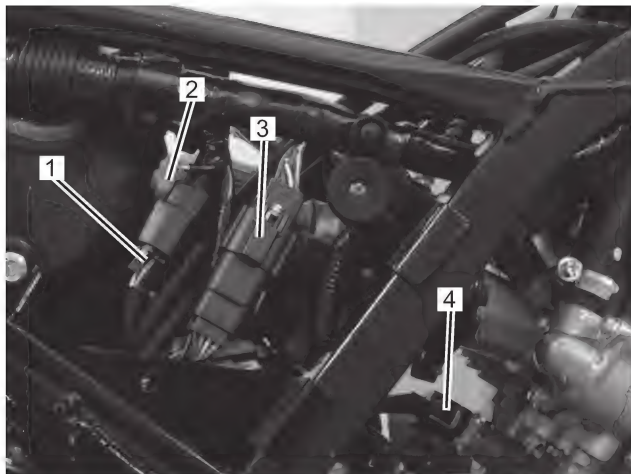
- a) Fuel tank side cover: (Page 9D-23)
- b) Under cowling: (Page 9D-25)
- c) Frame cover: (Page 9D-30)
- 4) Drain engine coolant. Refer to "Engine Coolant Replacement" in Section 1F (Page 1F-5).
- 5) Remove the muffler. (Page 1K-2)
- 6) Remove the intake pipe. (Page 1D-15)
- 7) Remove the radiator. (Page 1F-8)

- 8) Remove the engine sprocket. (Page 3A-4)
- 9) Remove the GP switch from crankcase. Refer to "GP Switch Removal and Installation" in Section 5B (Page 5B-11).
- 10) Remove the clutch cable from the clutch release arm. Refer to "Clutch Cable Removal and Installation" in Section 5C (Page 5C-3).
- 11) Disconnect the spark plug cap (1).



IH23K1140131-02

- 12) Disconnect the stop lamp switch lead wire coupler (1), generator lead wire coupler (2), gear position sensor lead wire coupler (3), and ECT sensor coupler (4).



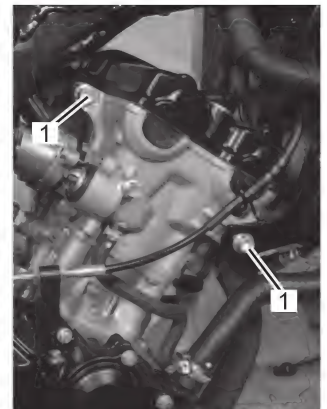
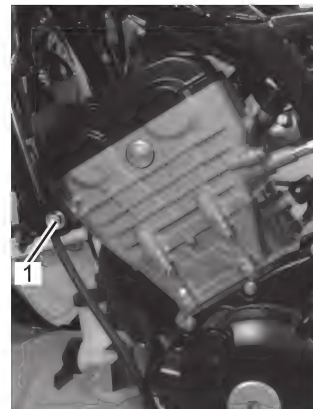
IH23K1140057-02

- 13) Support the engine using a jack (1).



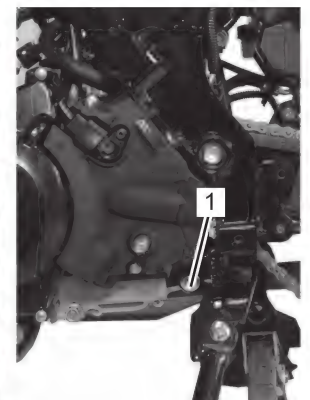
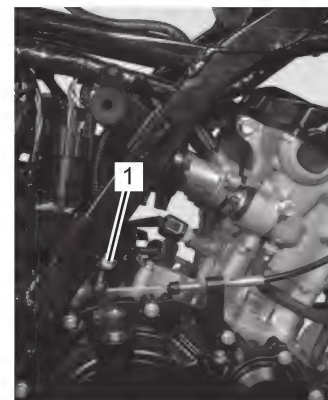
IH23K1140058-01

- 14) Remove the engine mounting bolts (1).



IH23K1140059-02

- 15) Remove the engine mounting nuts (1) and bolts.
- 16) Gradually lower the engine. Then, remove the engine assembly from the frame.



IH23K1140060-02

Engine Assembly Installation

BENH23K21406038

Install the engine assembly in the reverse order of removal. Pay attention to the following points:

- Install the engine assembly using a jack.

NOTICE

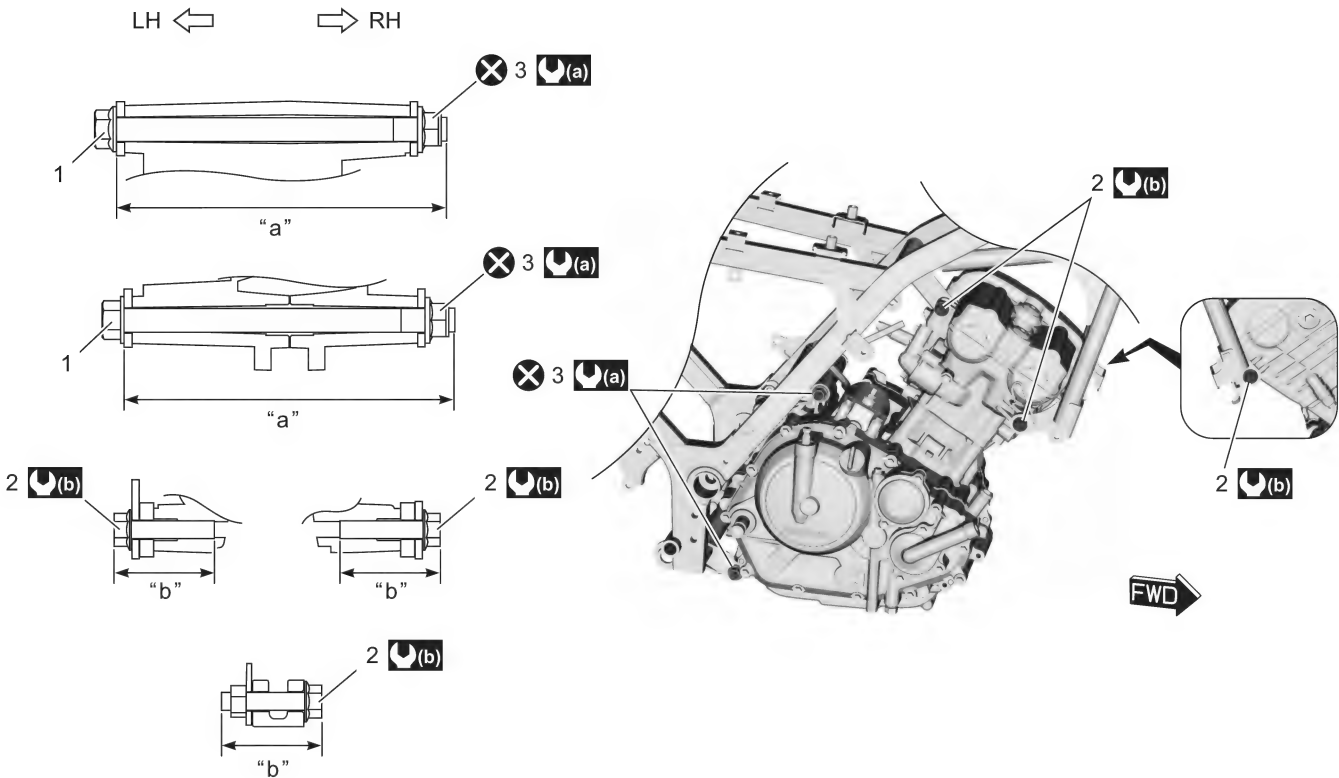
Be careful not to catch the wiring harness and hoses between the frame and the engine.

- Insert the engine mounting bolts (crankcase) (1) from left side, and install their new nuts (3).
- Install the engine mounting bolts (2) (cylinder head).
- Tighten the each bolts and nuts to the specified torque as shown.

Tightening torque

Engine mounting nut (a): 75 N·m (7.6 kgf-m, 55.3 lbf-ft)

Engine mounting bolt (b): 31 N·m (3.1 kgf-m, 22.8 lbf-ft)



IG12K1140136-02

1. Engine mounting bolt (crankcase)	"a": 140 mm (5.51 in)	⚙(b) : 31 N·m (3.1 kgf-m, 22.8 lbf-ft)
2. Engine mounting bolt (cylinder head)	"b": 35 mm (1.38 in)	⊗ : Do not reuse.
3. Engine mounting nut	⚙(a) : 75 N·m (7.6 kgf-m, 55.3 lbf-ft)	

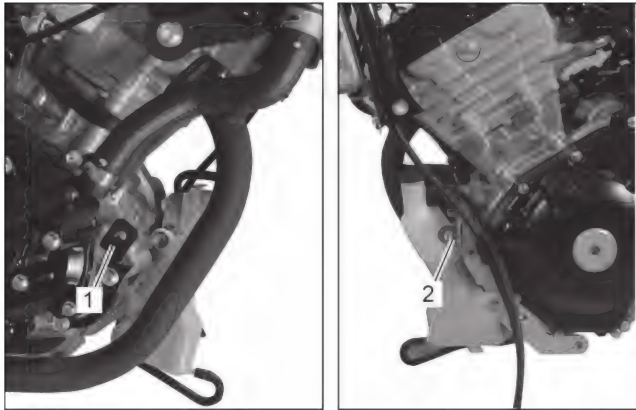
- Check the wiring harness routing. ⌚(Page 9A-7)
- After finishing the engine installation, check the following items.
 - Drive chain slack: ⌚(Page 3A-2)
 - Gearshift lever height: ⌚(Page 5B-13)
 - Throttle cable play: ⌚(Page 1D-12)
 - Clutch cable play: ⌚(Page 5C-3)
 - Engine oil leakage: ⌚(Page 1E-5)
 - Engine coolant leakage: ⌚(Page 1F-6)
 - Fuel leakage: ⌚(Page 1G-5)

Crankcase Assembly Disassembly

BENH23K21406039

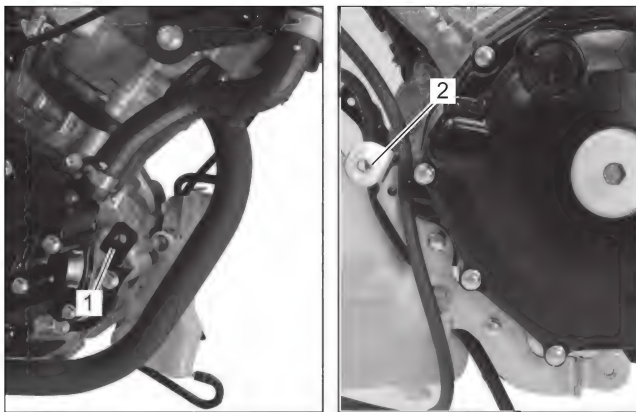
- 1) Remove the engine assembly. (Page 1D-44)
- 2) Remove the piston. (Page 1D-38)
- 3) Remove the starter motor assembly. (Page 1I-5)
- 4) Remove under cowling brace (1) and reservoir bracket (2).

GSX R 150 Model



IH23K1140065-01

GSX S 150 Model



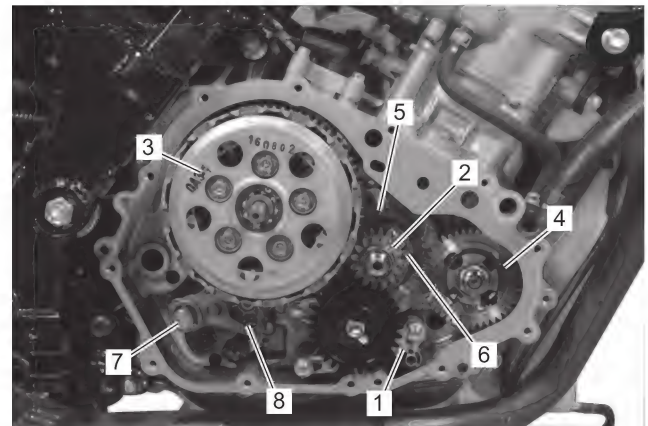
IH23K2140007-01

- 5) Remove the clutch cover. Refer to "Clutch Removal" in Section 5C (Page 5C-6).

- 6) Remove the generator cover. Refer to "Generator Removal" in Section 1J (Page 1J-5).
- 7) Remove the right side parts as follows.

GSX R 150 Model

- Oil pump (1) and oil pump drive gear (2): (Page 1E-8)
- Clutch (3): (Page 5C-6)
- Balancer shaft driven gear (4), balancer shaft drive gear (5) and primary drive gear (6): (Page 1D-42)
- Gearshift shaft (7) and gearshift cam (8): (Page 5B-15)

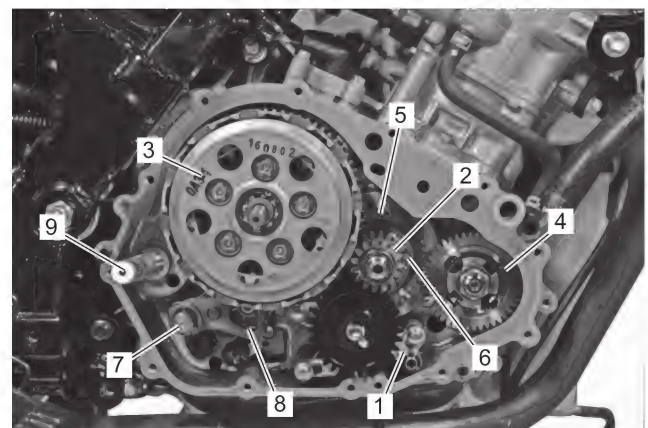


IH23K1140061-02

GSX S 150 Model

Remove the right side parts as follows.

- Oil pump (1) and oil pump drive gear (2): (Page 1E-8)
- Clutch (3): (Page 5C-6)
- Balancer shaft driven gear (4), balancer shaft drive gear (5) and primary drive gear (6): (Page 1D-42)
- Gearshift shaft (7) and gearshift cam (8): (Page 5B-15)
- Kick starter shaft (9): (Page 1I-14)

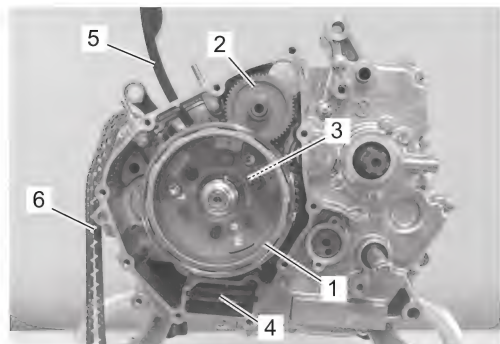


IH23K2140006-01

1D-48 Engine Mechanical:

8) Remove the left side parts as follows.

- Generator rotor (1): (Page 1J-5)
- Starter idle gear (2) and starter clutch gear (3): (Page 1I-9)
- Oil sump filter (4)
- Cam chain tensioner (5): (Page 1D-31)
- Cam chain (6): (Page 1D-42)

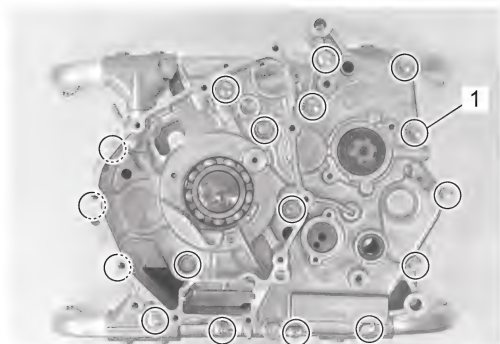


IG12K1140166-01

9) Remove the crankcase bolts (1) from left side.

NOTE

Loosen the crankcase bolts diagonally.



IG12K1140137-02

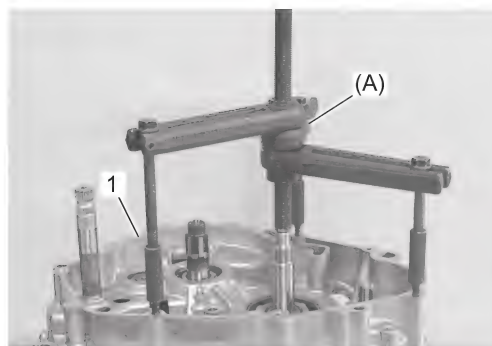
10) Turn over the crankcase and remove the right crankcase (1) with the special tool.

NOTE

- Fit the crankcase separating tool, so that the tool arms are in parallel with the side of crankcase.
- The crankshaft and transmission components should remain in the left crankcase half.

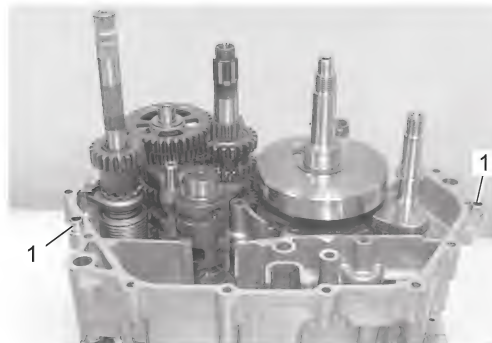
Special tool

(A): 09920-13120



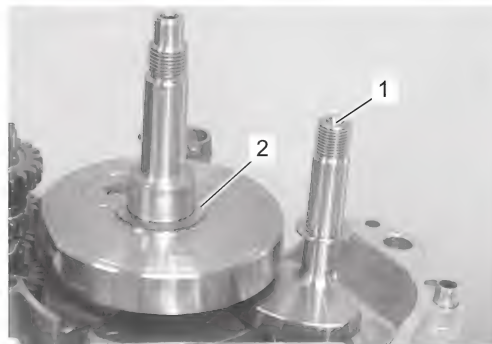
IG12K1140138-01

11) Remove the dowel pins (1).



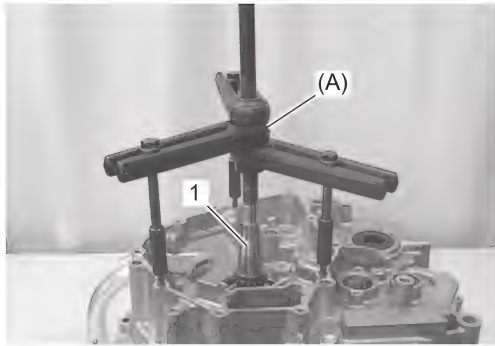
IG12K1140139-01

12) Remove the crank balancer shaft (1) and shim (2).



IG12K1140140-01

- 13) Remove the transmission component parts. (Page 5B-3)
- 14) Remove the crankshaft assembly (1) with the special tool.

Special tool**(A): 09920-13120**

IG12K1140141-01

- 15) Remove the crankcase bearings. (Page 1D-53)

Crankcase Assembly Reassembly

BENH23K21406040

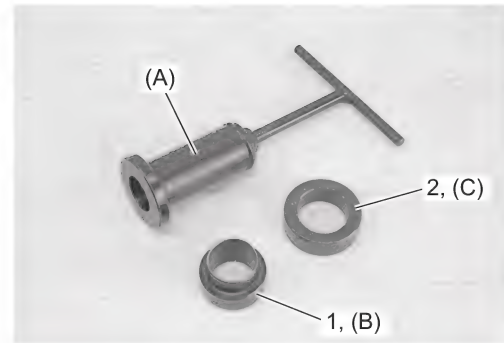
- 1) Install the crankcase bearings. (Page 1D-53)
- 2) Install the crankshaft assembly into the left crankcase using the special tools.

NOTICE

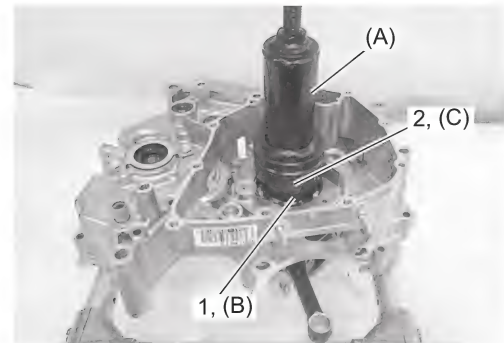
- Do not hit the crankshaft with a plastic mallet or the like to install it into the crankcase.
- Make sure that the direction of conrod is turned toward the cylinder hole.

NOTE

When installing the crankshaft into the crankcase, insert the attachments $\varnothing 35$ mm (1) of the bearing installation set and crankshaft installer attachment (2) between the crankcase bearing inner race and crankshaft installer.

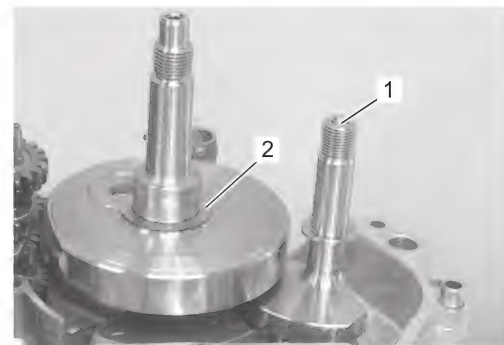
Special tool**(A): 09910-32812****(B): 09913-70210****(C): 09910-32860**

IG12K1140168-01



IG12K1140142-01

- 3) Install the transmission component parts. (Page 5B-3)
- 4) Install the crank balancer shaft (1) and shim (2).

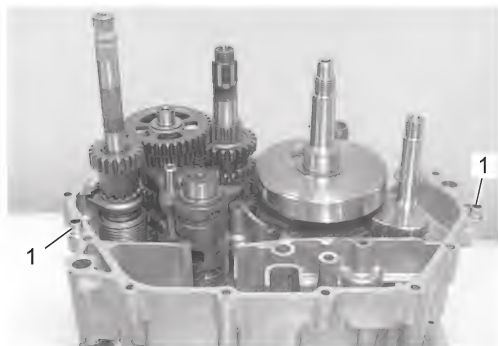


IG12K1140140-01

- 5) Clean the mating surfaces of the left and right crankcase halves.

1D-50 Engine Mechanical:

- 6) Install the dowel pins (1) into the left crankcase.



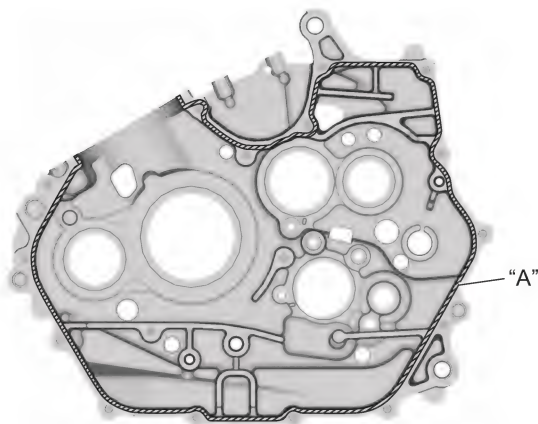
IG12K1140139-01

- 7) Apply engine oil to each running and sliding part.
8) Apply sealant to the mating surface of the right crankcase.

NOTE

- Make surfaces free from moisture, oil, dust and other foreign materials.
- Spread on surfaces thinly to form an even layer, and assemble the crankcases within few minutes.
- Take extreme care not to apply any sealant to the oil hole, oil groove and bearing.
- Apply to distorted surfaces as it forms a comparatively thick film.

“A”: Sealant 99000-31110 (SUZUKI BOND 1215)



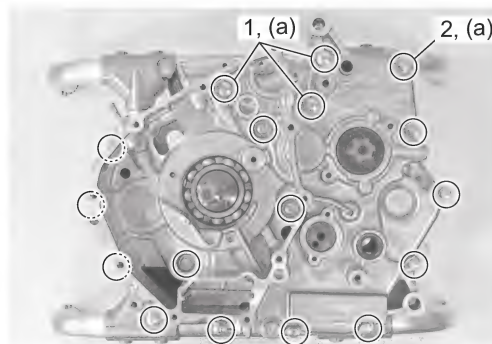
IG12K1140143-02

- 9) Assemble the right and left crankcase halves.

- 10) Tighten the crankcase bolts (L75) (1) and (L40) (2) a little at a time to equalize the pressure.

Tightening torque

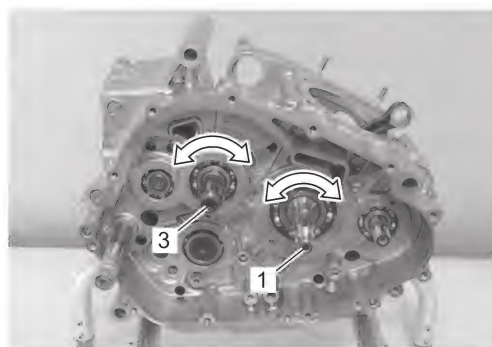
Crankcase bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IG12K1140144-01

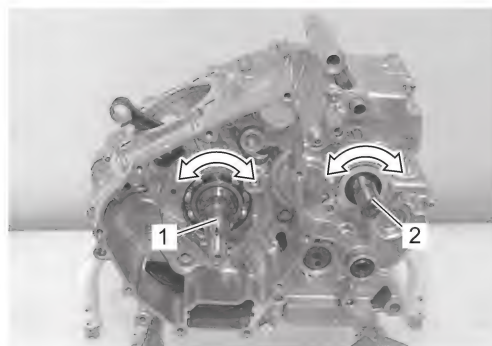
- 11) After the crankcase bolts have been tightened, check if the crankshaft (1), driveshaft (2) and countershaft (3) rotate smoothly.

Right side



IG12K1140145-01

Left side



IG12K1140146-01

- 12) Install the removed parts.

Conrod / Crankshaft Inspection

BENH23K21406041

Refer to "Crankcase Assembly Disassembly" (Page 1D-47) and "Crankcase Assembly Reassembly" (Page 1D-49).

Conrod Small End I.D.

Measure the conrod small end inside diameter with a pair of dial calipers.

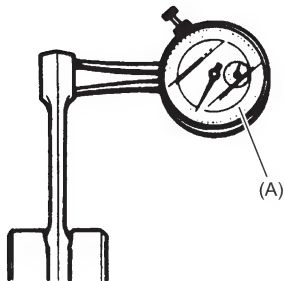
If the conrod small end inside diameter exceeds the service limit, replace the crankshaft assembly.

Special tool

(A): 09900-20605

Conrod small end I.D.

[Limit]: 15.040 mm (0.5921 in)



IF34J1140164-01

Conrod Big End Side Clearance

Push the big end of the conrod to one side and measure the side clearance using a thickness gauge. If the clearance exceeds the service limit, replace crankshaft assembly.

Special tool

(A): 09900-20803

Conrod big end side clearance

[Limit]: 1.0 mm (0.039 in)



IG12K1140147-01

Conrod Deflection

Wear on the big end of the conrod can be estimated by checking the movement of the small end. This method can also check the extent of wear on the parts of the conrod big end.

If the deflection exceeds the service limit, replace the crankshaft assembly.

- Move the small end sideways while holding the big end immovable in thrust direction.
- Measure the amount of deflection.
- Turn the conrod and see if it moves smoothly without play and noise.

Special tool

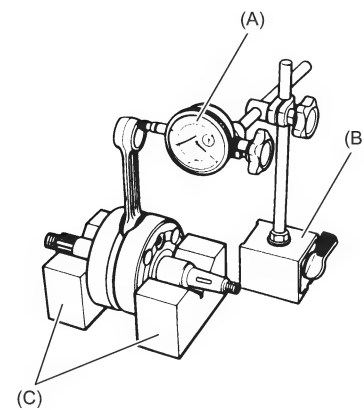
(A): 09900-20607

(B): 09900-20701

(C): 09900-21304

Conrod deflection

[Limit]: 3.0 mm (0.11 in)



IF34J1140165-01

Crankshaft Runout

With the right and left crank journals supported with V-blocks, turn the crankshaft slowly. At this time, measure the crankshaft end runout using a dial gauge. If the runout exceeds the service limit, replace the crankshaft assembly.

NOTE

Set the V-blocks so that the crankshaft becomes horizontal.

Special tool

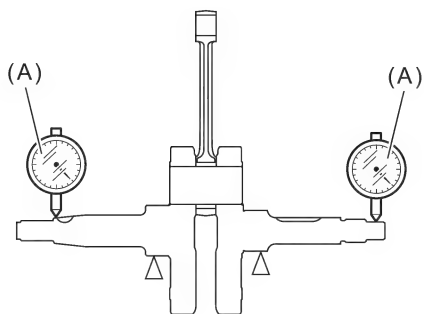
(A): 09900-20607

09900-20701

09900-21304

Crankshaft runout

[Limit]: 0.080 mm (0.0031 in)



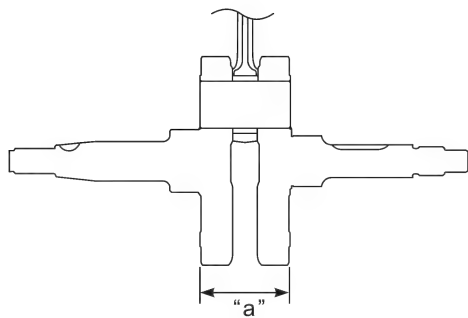
IG12K1140171-01

Width Between Crankshaft Webs

Measure the width "a" between crankshaft webs. If the width is out of specification, replace the crankshaft assembly.

Crank web to web width

[Standard]: 52.90 – 53.10 mm (2.083 – 2.090 in)



IG12K1140148-02

Balancer Shaft Inspection

BENH23K21406042

Refer to "Crankcase Assembly Disassembly" (Page 1D-47) and "Crankcase Assembly Reassembly" (Page 1D-49).

Inspect the balancer shaft for wear or damage. If any wear or damage is found, replace the balancer shaft with a new one.



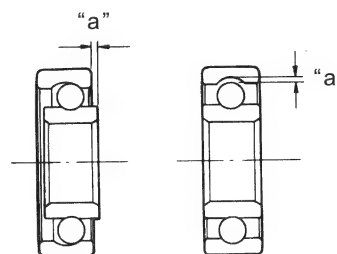
IG12K1140149-01

Crankcase Bearing / Oil Seal Inspection

BENH23K21406043

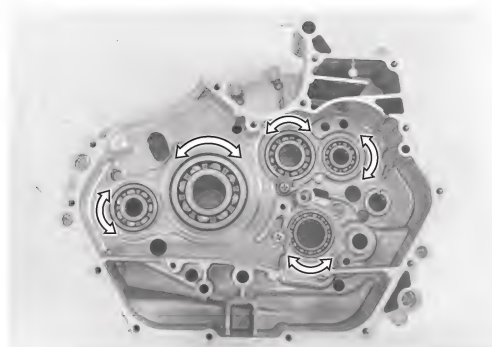
Refer to "Crankcase Assembly Disassembly" (Page 1D-47) and "Crankcase Assembly Reassembly" (Page 1D-49).

- 1) Inspect the play "a" of the bearings by hand while it is in the crankcase or installed in the crankshaft. Rotate the inner race or outer race by hand to inspect for abnormal noise and smooth rotation. Replace the bearings if there is anything unusual. (Page 1D-53)



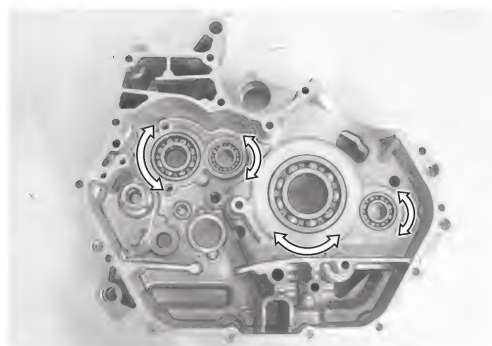
ID26J1140287-02

Right case



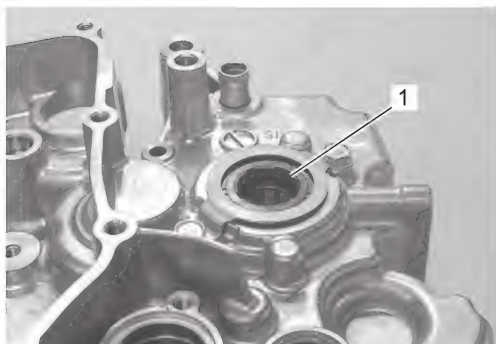
IG12K1140151-01

Left case



IG12K1140152-01

- 2) Inspect oil seal lip (1) for wear or damage. If any defects are found, replace the oil seal with a new one. (Page 5B-8)



IG12K1140153-01

Crankcase Bearing Removal and Installation

BENH23K21406044

Refer to "Crankcase Assembly Disassembly" (Page 1D-47) and "Crankcase Assembly Reassembly" (Page 1D-49).

Removal

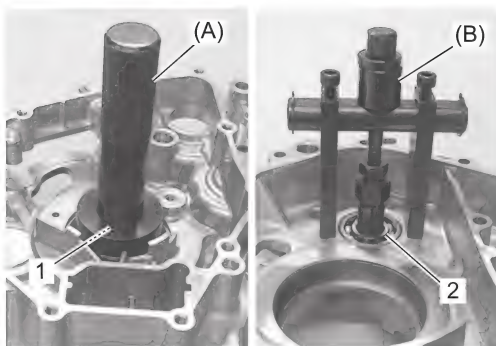
Left crankcase

- 1) Remove the crankshaft bearing (1) and balancer shaft bearing (2) with the special tools.

Special tool

(A): 09913-70210

(B): 09921-20240



IG12K1140154-01

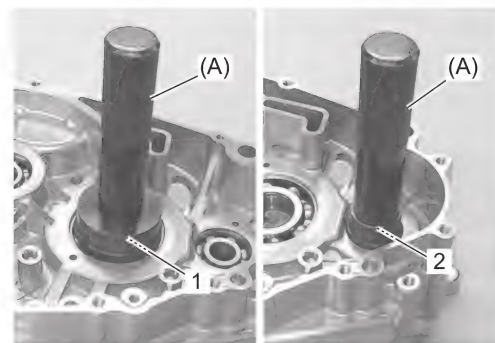
- 2) Remove the driveshaft bearing and countershaft bearing. (Page 5B-8)

Right crankcase

- 1) Remove the crankshaft bearing (1) and balancer shaft bearing (2) with the special tool.

Special tool

(A): 09913-70210



IG12K1140155-01

- 2) Remove the driveshaft bearing, countershaft bearing and gearshift cam bearing. (Page 5B-8)

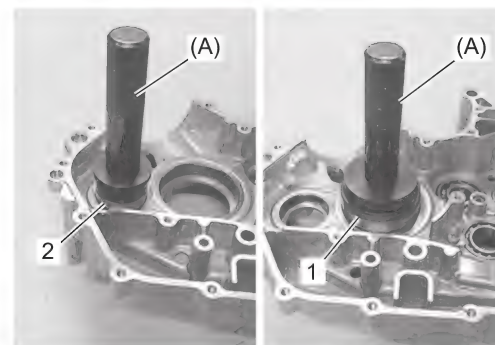
Installation

Left crankcase

- 1) Install a new crankshaft bearing (1) and a new balancer shaft bearing (2) using the special tool.

Special tool

(A): 09913-70210



IG12K1140156-01

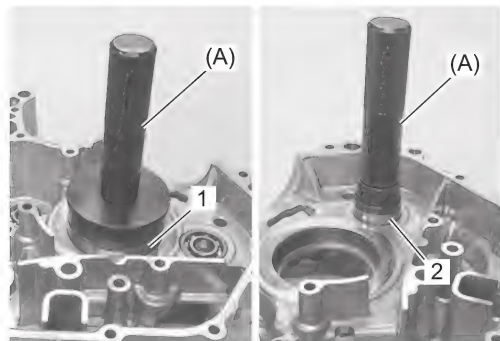
- 2) Install the driveshaft bearing and countershaft bearing. (Page 5B-8)

Right crankcase

- 1) Install a new crankshaft bearing (1) and a new balancer shaft bearing (2) using the special tool.

Special tool

(A): 09913-70210



IG12K1140157-01

- 2) Install the driveshaft bearing, countershaft bearing and gearshift cam bearing. (Page 5B-8)

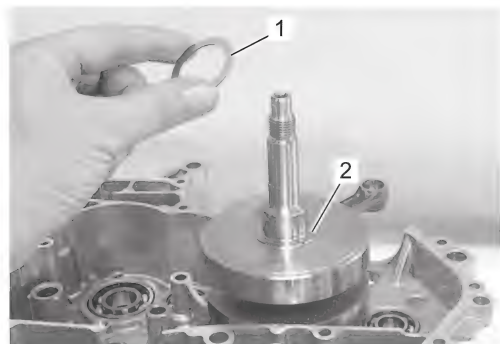
Crankshaft Thrust Clearance Inspection and Shim Selection

BENH23K21406045

Refer to "Crankcase Assembly Disassembly" (Page 1D-47) and "Crankcase Assembly Reassembly" (Page 1D-49).

Inspection

- 1) Install the crankshaft into the left crankcase.
- 2) Clean and degrease the contact surfaces of the crankshaft, shim and inner race of the right crankshaft bearing.
- 3) Install the removed shim (1) onto the crankshaft (2).

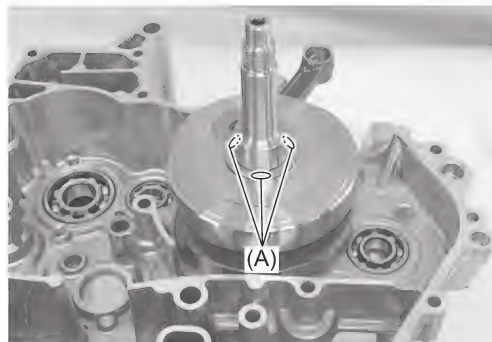


IG12K1140158-01

- 4) Put the plastigage (special tool) about 10 mm (0.39 in) on the shim as shown.

Special tool

(A): 09900-22301



IG12K1140159-01

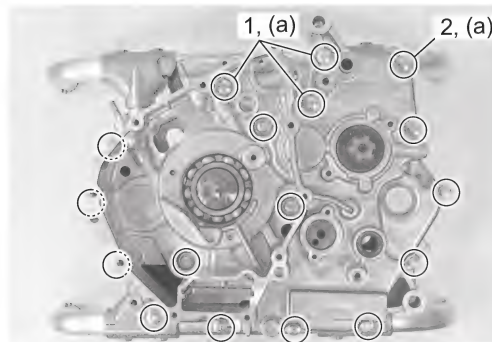
- 5) Install the right crankcase and tighten the bolts (L75) (1) and (L40) (2) to the specified torque.

NOTE

Do not apply sealant to the mating surfaces in this stage.

Tightening torque

Crankcase bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IG12K1140160-01

- 6) Separate the crankcase into 2 parts, left and right.
- 7) Measure the width of compressed plastigage with the envelope scale.

Crankshaft thrust clearance

[Standard]: -0.02 – 0.07 mm (-0.0008 – 0.0028 in)



IG12K1140161-01

- 8) If the thrust clearance is out of standard value, select an appropriate shim.

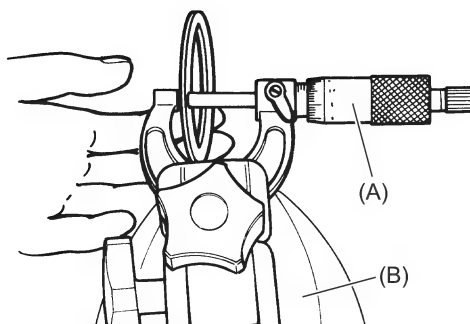
Selection

- 1) Remove the thrust shim and measure its thickness using the micrometer.

Special tool

(A): 09912-66310

(B): 09900-20702



ID26J1140236-01

- 2) Select a suitable shim from the following table.

Crankshaft thrust clearance (measured value) + shim thickness (measured value)	Part No.	Thrust shim thickness
0.60 – 0.65 mm (0.024 – 0.026 in)	12228-12K00-0A0	0.58 – 0.62 mm (0.023 – 0.024 in)
0.65 – 0.70 mm (0.026 – 0.028 in)	12228-12K00-0B0	0.63 – 0.67 mm (0.025 – 0.026 in)
0.70 – 0.75 mm (0.028 – 0.030 in)	12228-12K00-0C0	0.68 – 0.72 mm (0.027 – 0.028 in)
0.75 – 0.80 mm (0.030 – 0.031 in)	12228-12K00-0D0	0.73 – 0.77 mm (0.029 – 0.030 in)
0.80 – 0.85 mm (0.031 – 0.033 in)	12228-12K00-0E0	0.78 – 0.82 mm (0.031 – 0.032 in)
0.85 – 0.90 mm (0.033 – 0.035 in)	12228-12K00-0F0	0.83 – 0.87 mm (0.033 – 0.034 in)
0.90 – 0.95 mm (0.035 – 0.037 in)	12228-12K00-0G0	0.88 – 0.92 mm (0.035 – 0.036 in)
0.95 – 1.00 mm (0.037 – 0.039 in)	12228-12K00-0H0	0.93 – 0.97 mm (0.037 – 0.038 in)
1.00 – 1.05 mm (0.039 – 0.041 in)	12228-12K00-0J0	0.98 – 1.02 mm (0.039 – 0.040 in)
1.05 – 1.10 mm (0.041 – 0.043 in)	12228-12K00-0K0	1.03 – 1.07 mm (0.041 – 0.042 in)
1.10 – 1.15 mm (0.043 – 0.045 in)	12228-12K00-0L0	1.08 – 1.12 mm (0.043 – 0.044 in)
1.15 – 1.20 mm (0.045 – 0.047 in)	12228-12K00-0M0	1.13 – 1.17 mm (0.044 – 0.046 in)
1.20 – 1.25 mm (0.047 – 0.049 in)	12228-12K00-0N0	1.18 – 1.22 mm (0.046 – 0.048 in)
1.25 – 1.30 mm (0.049 – 0.051 in)	12228-12K00-0P0	1.23 – 1.27 mm (0.048 – 0.050 in)
1.30 – 1.35 mm (0.051 – 0.053 in)	12228-12K00-0R0	1.28 – 1.32 mm (0.050 – 0.052 in)
1.35 – 1.40 mm (0.053 – 0.055 in)	12228-12K00-0S0	1.33 – 1.37 mm (0.052 – 0.054 in)
1.40 – 1.45 mm (0.055 – 0.057 in)	12228-12K00-0T0	1.38 – 1.42 mm (0.054 – 0.056 in)

Specifications**Tightening Torque Specifications**

BENH23K21407001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Air cleaner outlet tube clamp screw	1.5	0.15	1.10	☞ (Page 1D-12)
Air cleaner box bolt	8	0.8	5.9	☞ (Page 1D-12)
Throttle body clamp screw	1.5	0.15	1.10	☞ (Page 1D-14)
Intake pipe mounting bolt	1.0 N·m → 6.5 N·m (0.10 kgf·m → 0.66 kgf·m, 0.75 lbf·ft → 4.80 lbf·ft)			☞ (Page 1D-16)
Intake pipe No.2 clamp screw	1.5	0.15	1.10	☞ (Page 1D-16)
Cylinder head cover bolt	12	1.2	9.0	☞ (Page 1D-17)
Cam sprocket bolt	11	1.1	8.5	☞ (Page 1D-18)
Camshaft journal holder bolt	10	1.0	7.5	☞ (Page 1D-20)
Cam chain tension adjuster bolt	10	1.0	7.5	☞ (Page 1D-21)
Cam chain tension adjuster plug	8.0	0.82	5.90	☞ (Page 1D-21)
Valve timing inspection plug	2.3	0.23	2.0	☞ (Page 1D-22)
Generator cover plug	11	1.1	8.5	☞ (Page 1D-22)

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Cylinder head bolt	17 N·m → 25 N·m (1.7 kgf·m → 2.5 kgf·m, 12.5 lbf·ft → 18.5 lbf·ft)			☞ (Page 1D-30)
Cylinder nut	10	1.0	7.5	☞ (Page 1D-31)
Cylinder head nut	10	1.0	7.5	☞ (Page 1D-31)
Engine mounting bolt	23	2.3	17.0	☞ (Page 1D-31)
Bolt	10	1.0	7.5	☞ (Page 1D-31)
Cam chain tensioner bolt	10	1.0	7.5	☞ (Page 1D-32)
Balancer shaft driven gear nut	50	5.1	37.0	☞ (Page 1D-43)
Engine mounting nut	75	7.6	55.3	☞ (Page 1D-46)
Engine mounting bolt	31	3.1	22.8	☞ (Page 1D-46)
Crankcase bolt	10	1.0	7.5	☞ (Page 1D-50) / ☞ (Page 1D-54)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Throttle Cable Routing Diagram” (Page 1D-1)

“Intake System Components” (Page 1D-6)

“Engine Assembly Installation” (Page 1D-46)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

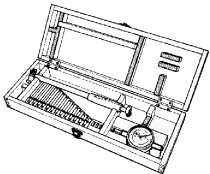
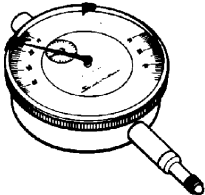
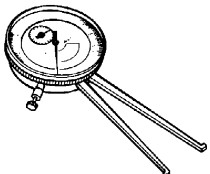
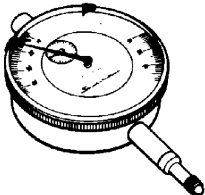
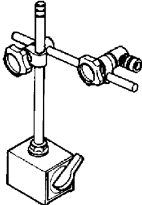

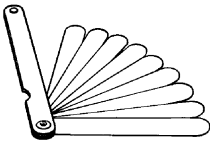
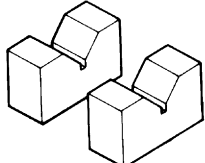


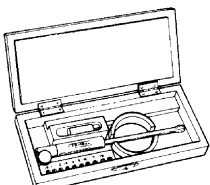
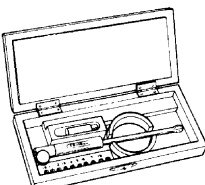
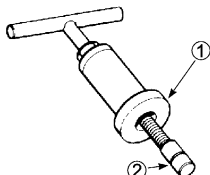
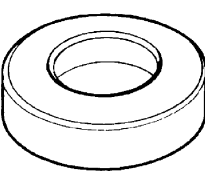
BENH23K21408001

Material	SUZUKI recommended product or Specification		Note
Assembly lubrication	Molybdenum oil solution	—	☞ (Page 1D-18) / ☞ (Page 1D-30) / ☞ (Page 1D-34) / ☞ (Page 1D-34) / ☞ (Page 1D-38)
Sealant	SUZUKI BOND 1215	P/No.: 99000–31110	☞ (Page 1D-29) / ☞ (Page 1D-50)
	SUZUKI BOND 1207B	P/No.: 99000–31140	☞ (Page 1D-16)
Thread lock cement	THREAD LOCK CEMENT 1303B	P/No.: 99000–32030	☞ (Page 1D-18)

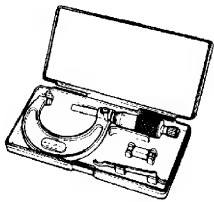
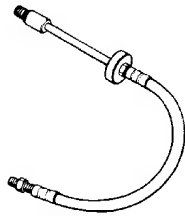
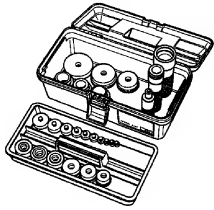
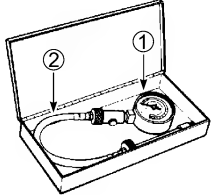
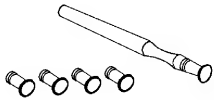
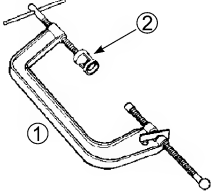
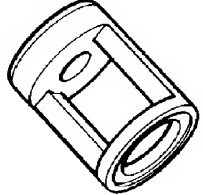
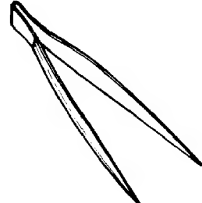
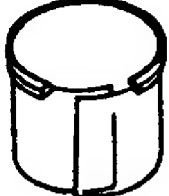
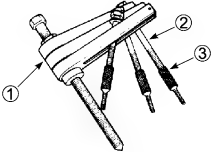
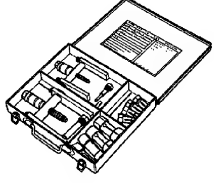
Special Tool

BENH23K21408002

09900–06107 Snap ring pliers (External) ☞ (Page 1D-43)		09900–20102 Vernier calipers (200 mm) ☞ (Page 1D-35) / ☞ (Page 1D-37) / ☞ (Page 1D-41)	
09900–20202 Micrometer (25 - 50 mm) ☞ (Page 1D-22)		09900–20203 Micrometer (50 - 75 mm) ☞ (Page 1D-40)	

<p>09900-20530 Cylinder gauge set ☞ (Page 1D-38)</p> 	<p>09900-20602 Dial gauge (1 x 0.001 mm) ☞ (Page 1D-23) / ☞ (Page 1D-41)</p> 
<p>09900-20605 Dial calipers (10 - 34 mm) ☞ (Page 1D-51)</p> 	<p>09900-20607 Dial gauge (10 x 0.01 mm) ☞ (Page 1D-23) / ☞ (Page 1D-35) / ☞ (Page 1D-35) / ☞ (Page 1D-51) / ☞ (Page 1D-51)</p> 
<p>09900-20701 Dial gauge chuck ☞ (Page 1D-23) / ☞ (Page 1D-35) / ☞ (Page 1D-35) / ☞ (Page 1D-51) / ☞ (Page 1D-51)</p> 	<p>09900-20702 Micrometer fixture ☞ (Page 1D-55)</p> 
<p>09900-20803 Thickness gauge ☞ (Page 1D-24) / ☞ (Page 1D-33) / ☞ (Page 1D-38) / ☞ (Page 1D-40) / ☞ (Page 1D-41) / ☞ (Page 1D-51)</p> 	<p>09900-21304 V blocks ☞ (Page 1D-23) / ☞ (Page 1D-35) / ☞ (Page 1D-35) / ☞ (Page 1D-51) / ☞ (Page 1D-51)</p> 
<p>09900-22301 Plastigage (0.025 - 0.076 mm) ☞ (Page 1D-23) / ☞ (Page 1D-54)</p> 	<p>09900-22302 Plastigage (0.051 - 0.152 mm) ☞ (Page 1D-23)</p> 
<p>09900-22401 Small bore gauge (10 - 18 mm) ☞ (Page 1D-41)</p> 	<p>09900-22403 Small bore gauge (18 - 35 mm) ☞ (Page 1D-23)</p> 
<p>09910-32812 Crankshaft installer 1. Main unit 2. Attachment ☞ (Page 1D-49)</p> 	<p>09910-32860 Crankshaft installer spacer (20 mm) ☞ (Page 1D-49)</p> 

1D-58 Engine Mechanical:

<p>09912-66310 Micrometer (0 - 25 mm) ☞ (Page 1D-23) / ☞ (Page 1D-36) / ☞ (Page 1D-40) / ☞ (Page 1D-41) / ☞ (Page 1D-55)</p>		<p>09913-10750 Compression gauge adapter ☞ (Page 1D-5)</p>	
<p>09913-70210 Bearing installer set ☞ (Page 1D-49) / ☞ (Page 1D-53) / ☞ (Page 1D-53) / ☞ (Page 1D-53) / ☞ (Page 1D-54)</p>		<p>09915-64512 Compression gauge set (2500 kPa) 1. Gauge 2. Hose (Adapter) ☞ (Page 1D-5)</p>	
<p>09916-10911 Valve lapper set ☞ (Page 1D-36)</p>		<p>09916-14510 Valve lifter 1. Main unit 2. Attachment ☞ (Page 1D-33) / ☞ (Page 1D-34)</p>	
<p>09916-14530 Valve lifter attachment ☞ (Page 1D-33) / ☞ (Page 1D-34)</p>		<p>09916-84511 Tweezers ☞ (Page 1D-33) / ☞ (Page 1D-34)</p>	
<p>09919-28610 Sleeve protector ☞ (Page 1D-33) / ☞ (Page 1D-34)</p>		<p>09920-13120 Crankcase separator 1. Main unit 2. Bolt 3. Attachment ☞ (Page 1D-48) / ☞ (Page 1D-49)</p>	
<p>09921-20240 Bearing remover set ☞ (Page 1D-53)</p>			

Engine Lubrication System

Precautions

Precautions for Engine Oil

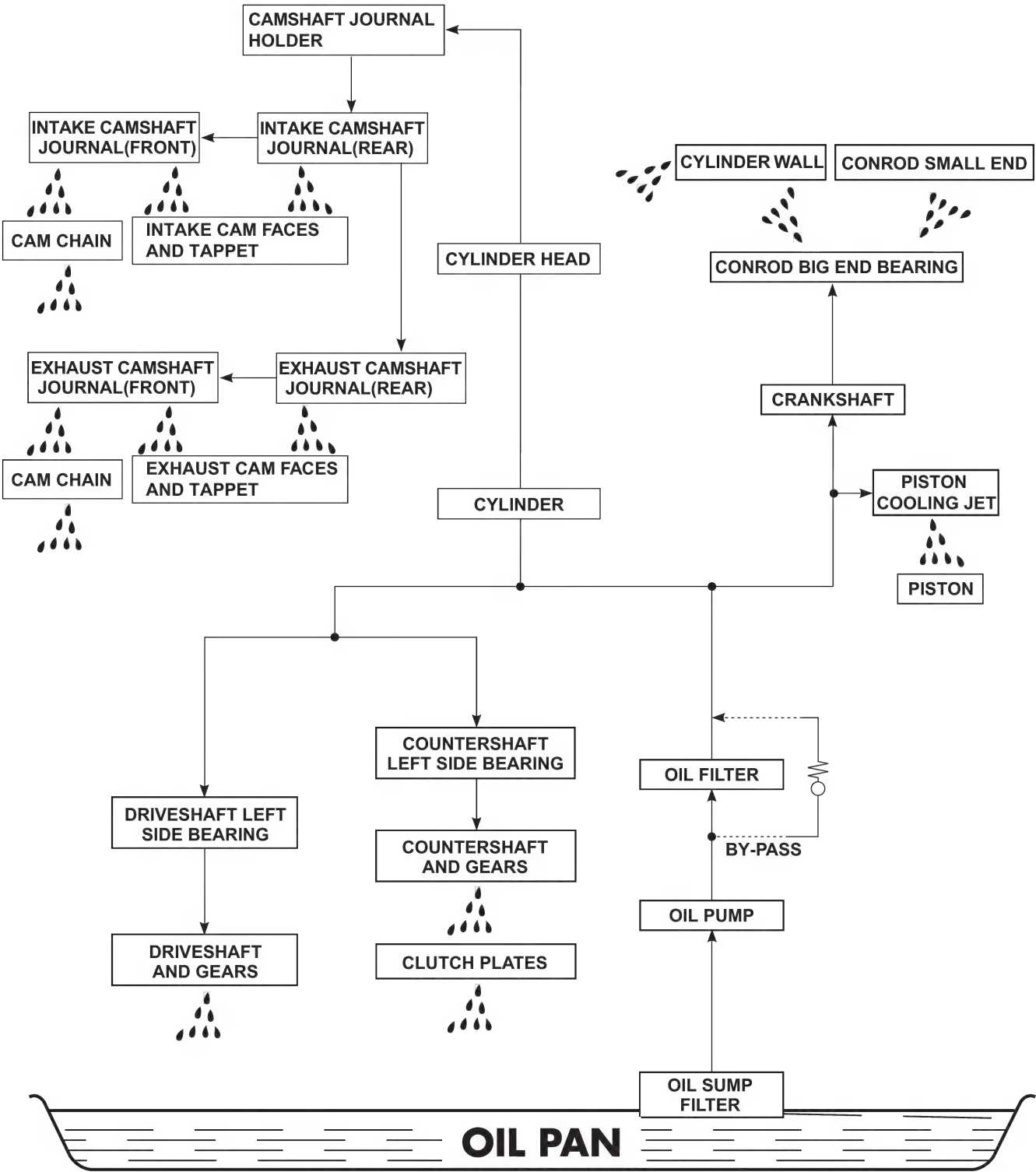
Refer to "Fuel / Oil / Fluid / Coolant Recommendation" in Section 0C (Page 0C-11).

BENH23K21500001

Schematic and Routing Diagram

Engine Lubrication System Chart Diagram

BENH23K21502001



Diagnostic Information and Procedures

Engine Lubrication Symptom Diagnosis

BENH23K21504001

Condition	Possible cause	Correction / Reference Item
Engine overheats	Insufficient amount of engine oil.	Check level and add. (Page 1E-5)
	Defective oil pump.	Replace. (Page 1E-8)
	Clogged oil circuit.	Clean.
	Incorrect engine oil.	Change. (Page 1E-5)
Exhaust smoke is dirty or thick	Excessive amount of engine oil.	Check level and drain. (Page 1E-5)
Engine lacks power	Excessive amount of engine oil.	Check level and drain. (Page 1E-5)

Oil Pressure Check

BENH23K21504002

Check the engine oil pressure periodically. This will give a good indication of the condition of the moving parts.

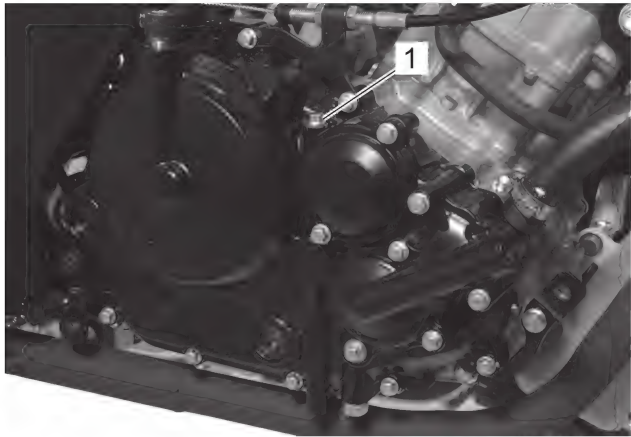
NOTE

Before checking the oil pressure, check the following:

- Oil level: (Page 1E-5)
- Oil leaks (If leak is found, repair it.)
- Oil quality (If oil is discolored or deteriorated, replace it.)

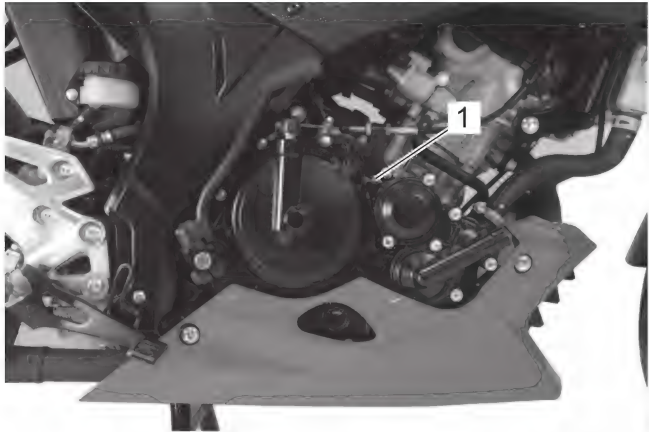
- 1) Remove the oil gallery plug (M6) (1).

GSX R 150 Model



IH23K1150001-01

GSX S 150 Model



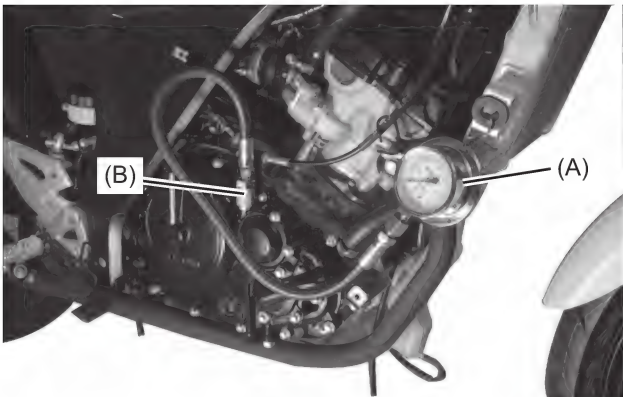
IH23K2150001-01

- 2) Install the oil pressure gauge and attachment into the oil gallery.

Special tool

(A): 09915-74511

(B): 09940-40211



IH23K1150007-02

1E-4 Engine Lubrication System:

- 3) Warm up the engine as follows:
Summer: 10 min. at 2000 r/min
Winter: 20 min. at 2000 r/min
- 4) After warm up, increase the engine speed to 3000 r/min and read the oil pressure gauge.
If the oil pressure is lower or higher than the specification, the following causes may be considered.

Oil pressure

At 60 °C (140 °F), 3000 r/min

[Standard]: 35 – 65 kPa (0.36 – 0.66 kgf/cm², 5.08 – 9.42 psi)

High oil pressure	Low oil pressure
<ul style="list-style-type: none">• Engine oil viscosity is too high• Clogged oil passage• Combination of the above items	<ul style="list-style-type: none">• Clogged oil filter• Oil leakage from the oil passage• Damaged O-ring• Defective oil pump• Combination of the above items

- 5) Stop the engine and remove the oil pressure gauge and attachment.

⚠ WARNING

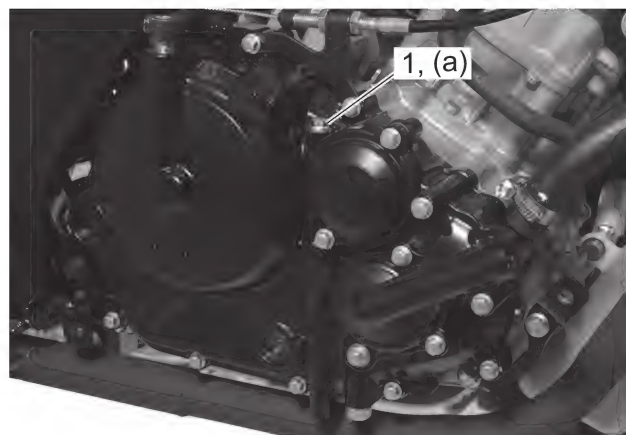
To avoid the risk of being burned, remove the oil pressure gauge when the oil has cooled.

- 6) Install a new gasket to the oil gallery plug (M6) (1).
- 7) Install the oil gallery plug (M6) and tighten it to the specified torque.

Tightening torque

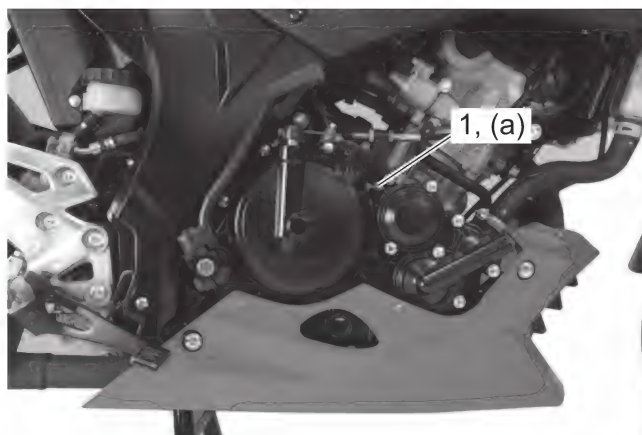
Oil gallery plug (M6) (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

GSX R 150 Model



IH23K1150002-01

GSX S 150 Model



IH23K2150002-01

- 8) Check the engine oil level. (Page 1E-5)

Repair Instructions

Engine Oil Inspection

BENH23K21506001

Engine Oil Leakage Inspection

Visually check the cylinder, crankcase, etc. for oil leakage.

Engine Oil Level Inspection

- 1) Keep the motorcycle upright.
- 2) Start the engine and allow it to run for three minutes at idling speed.
- 3) Turn off the engine and wait about three minutes, then check the oil level through the inspection window. If the level is below mark "L", add oil to "F" level. If the level is above mark "F", drain oil to "F" level.



IH23K1150003-01

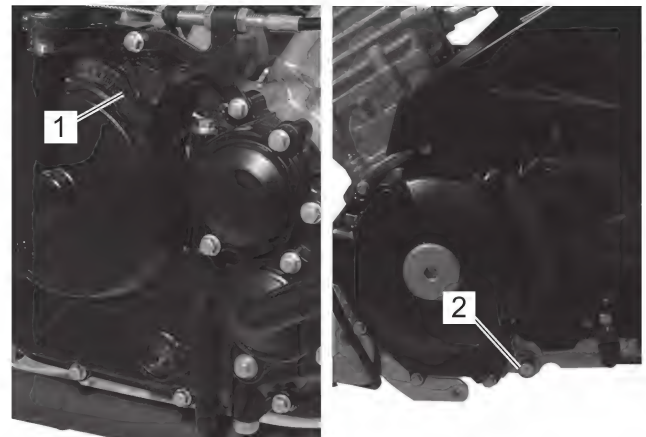
Engine Oil Replacement

BENH23K21506002

- 1) Keep the motorcycle upright with the center stand.
- 2) Place an oil pan below the engine and remove the oil filler cap (1).
- 3) Drain engine oil by removing the oil drain plug (2).

NOTE

Warming up of the engine will facilitate draining of the engine oil due to reduced viscosity.

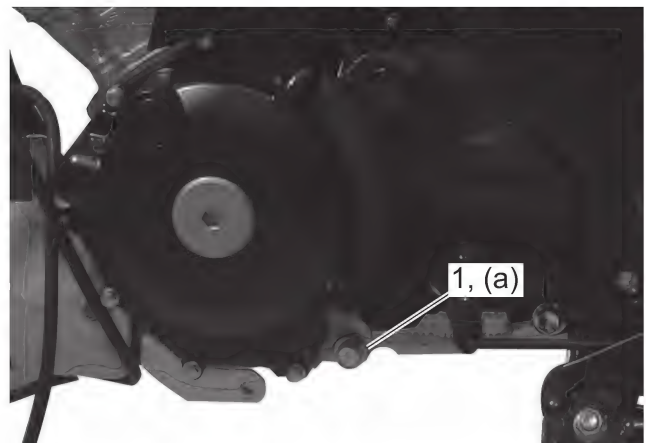


IH23K1150004-01

- 4) Install a new gasket washer to the oil drain plug (1).
- 5) Tighten the oil drain plug to the specified torque.

Tightening torque

Oil drain plug (a): 18 N·m (1.8 kgf-m, 13.5 lbf-ft)



IH23K1150005-01

1E-6 Engine Lubrication System:

6) Pour new oil through the oil filler hole.

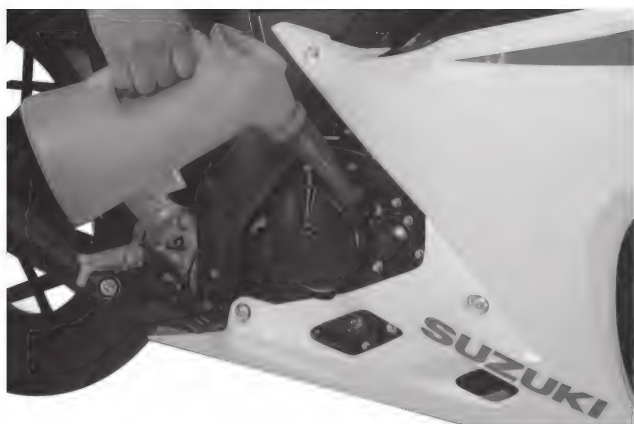
Necessary amount of engine oil

Oil change [Standard]: 1300 ml (1.37 US qt, 1.14 Imp qt)

Oil and filter change [Standard]: 1400 ml (1.48 US qt, 1.23 Imp qt)

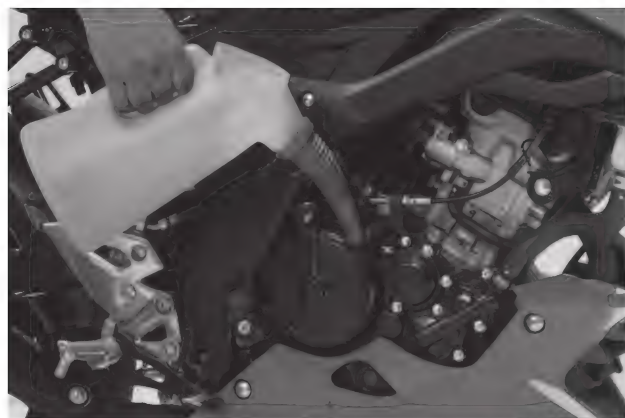
Engine overhaul [Standard]: 1500 ml (1.59 US qt, 1.32 Imp qt)

GSX R 150 Model



IH23K1150008-02

GSX S 150 Model



IH23K2150003-01

7) Install the oil filler cap.

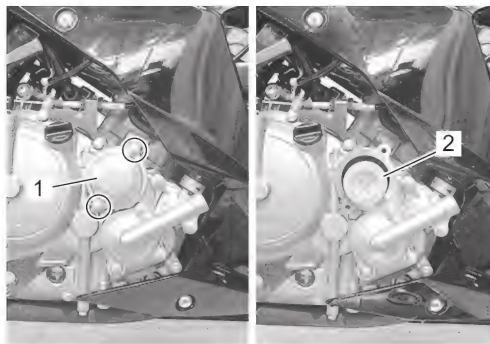
8) Check the engine oil level. (Page 1E-5)

Oil Filter Replacement

BENH23K21506003

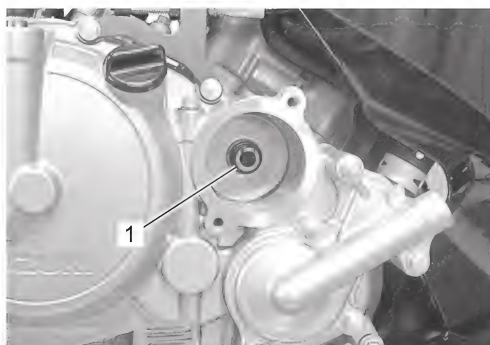
1) Drain engine oil. (Page 1E-5)

2) Remove the oil filter cap (1) and oil filter (2).



IG12K1150009-01

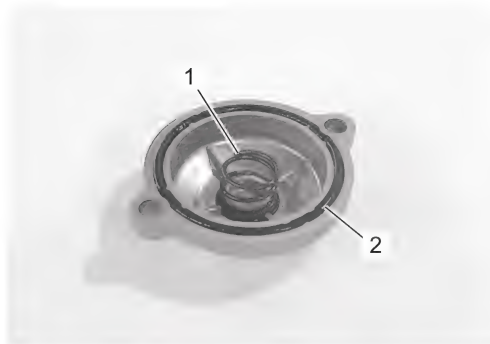
3) Replace the oil filter O-ring (1) with a new one and apply engine oil to it.



IG12K1150010-01

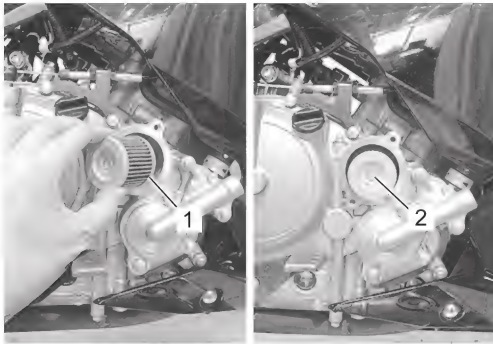
4) Fix the spring (1) to the oil filter cap firmly.

5) Replace the oil filter cap O-ring (2) with a new one and apply engine oil to it.



IG12K1150011-01

- 6) Position the oil filter (1) so that the valve (2) comes outside.

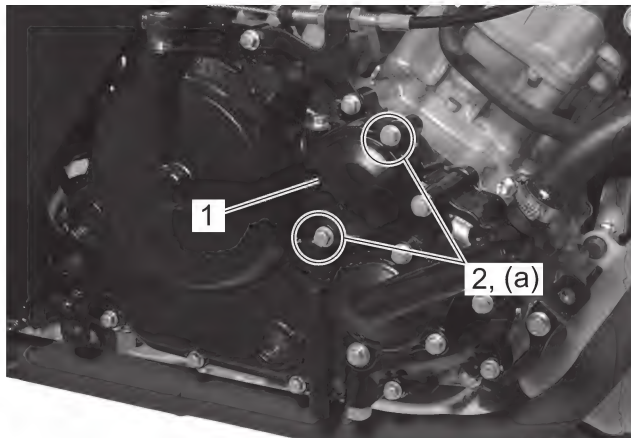


IG12K1150012-01

- 7) Install the oil filter cap (1) and tighten the bolts (2) to the specified torque.

Tightening torque

Oil filter cap bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IH23K1150006-01

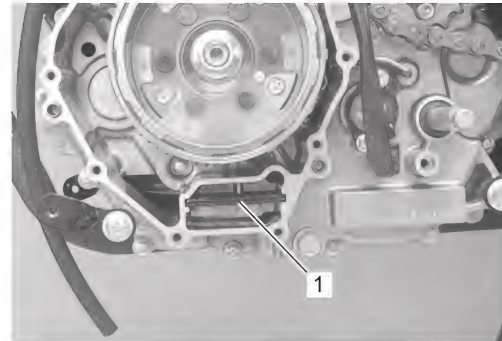
- 8) Add new engine oil. (Page 1E-5)
9) Check the engine oil level. (Page 1E-5)

Oil Sump Filter Removal and Installation

BENH23K21506004

Removal

- 1) Remove the generator cover and gasket. (Page 1J-5)
- 2) Remove the oil sump filter (1).



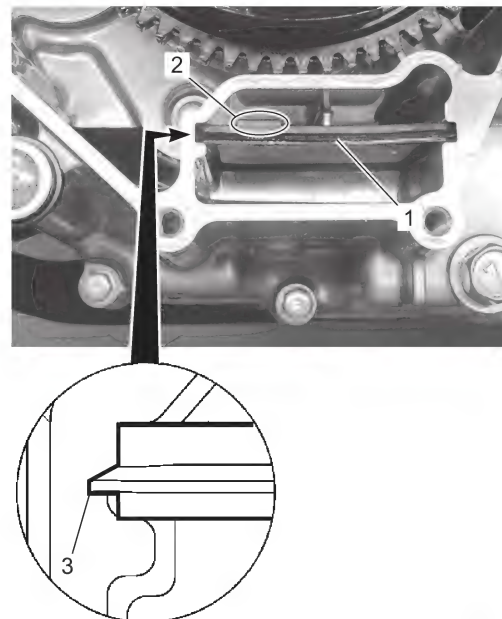
IG12K1150014-01

Installation

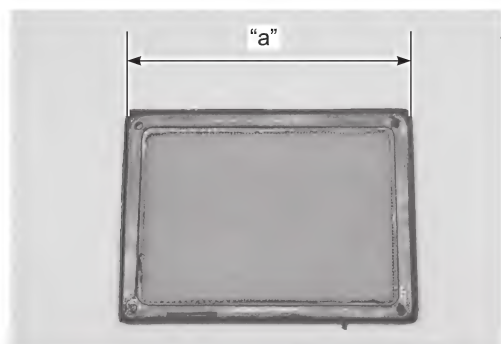
- 1) Install the oil sump filter (1).

NOTICE

- The tab (2) of the oil sump filter should be positioned upward.
- The lip (3) of the oil sump filter should be positioned downward.
- The shorter side of the oil sump filter should be positioned inside.



IG12K1150015-02



IG12K1150016-01

"a": Shorter side

2) Install the generator cover. (Page 1J-7)

Oil Sump Filter Inspection and Cleaning

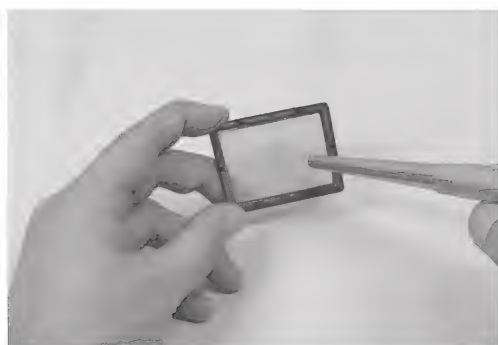
BENH23K21506005

Refer to "Oil Sump Filter Removal and Installation" (Page 1E-7).

If the oil sump filter is clogged with sediment or rust, clean the oil sump filter using compressed air.

NOTE

When the oil sump filter is excessively dirtied, replace it with a new one.



IG12K1150017-01

Oil Pump / Oil Pump Driven Gear / Oil Pump Drive Gear Removal and Installation

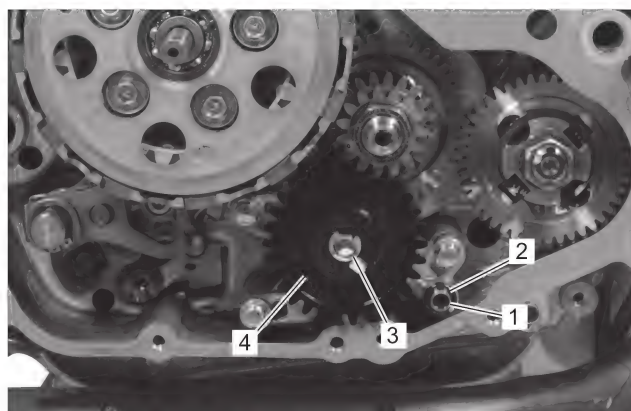
BENH23K21506006

Removal

NOTICE

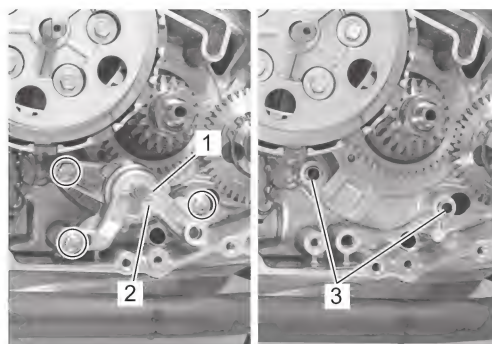
Do not attempt to disassemble the oil pump assembly. The oil pump is available only as an assembly.

- 1) Remove the clutch cover and gasket. Refer to "Clutch Removal" in Section 5C (Page 5C-6).
- 2) Remove the dowel pin (1), O-ring (2), E-ring (3) and oil pump driven gear (4).



IH23K1150009-01

- 3) Remove the pin (1), oil pump (2) and dowel pins (3).



IG12K1150019-01

- 4) Remove the generator cover. Refer to "Generator Removal" in Section 1J (Page 1J-5).

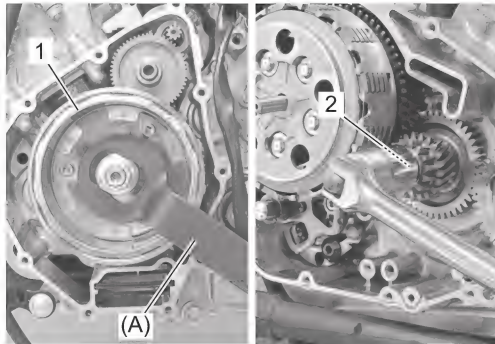
- 5) Hold the generator rotor (1) with the special tool and remove the oil pump drive gear nut (2).

NOTE

This oil pump drive gear nut has left-hand threads.

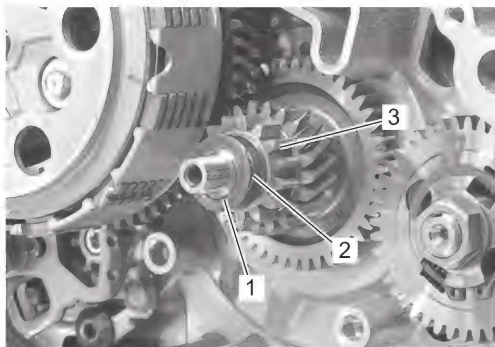
Special tool

(A): 09930-44521



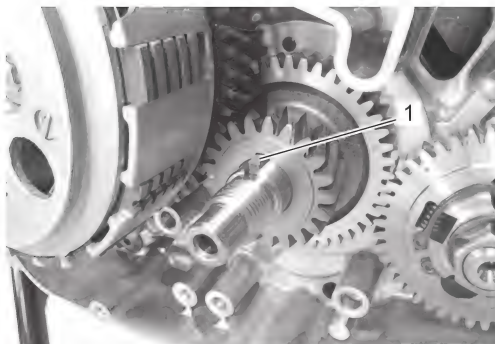
IG12K1150020-01

- 6) Remove the conical spring washer (1), washer (2) and oil pump drive gear (3).



IG12K1150021-01

- 7) Remove the key (1).



IG12K1150027-02

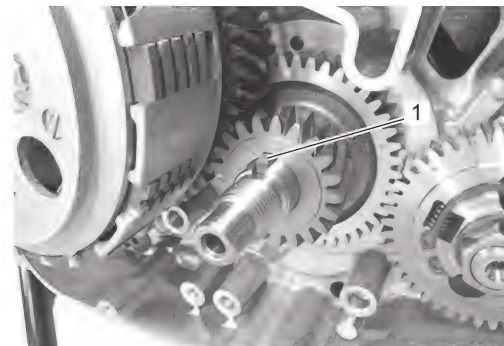
Installation

Install the oil pump in the reverse order of removal. Pay attention to the following points:

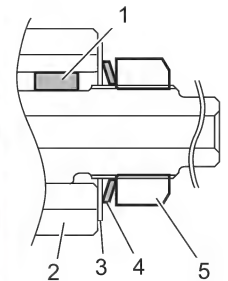
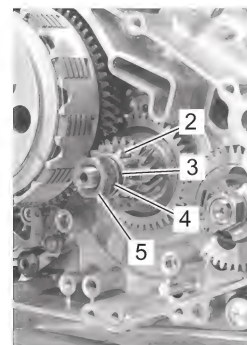
- Apply engine oil to the contacting surface and thread part of oil pump drive gear nut.
- Install the key (1), oil pump drive gear (2), washer (3), conical spring washer (4) and oil pump drive gear nut (5).

NOTE

- The conical curve side of spring washer faces outside.
- The primary drive gear nut has left-hand threads.



IG12K1150027-02



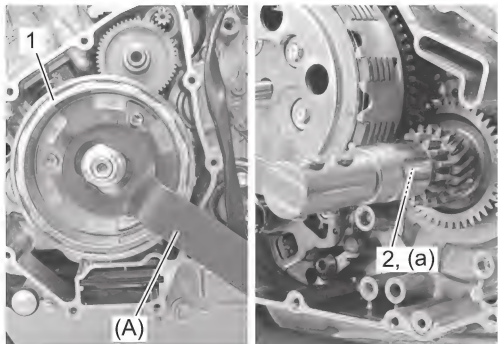
IG12K1150022-02

1E-10 Engine Lubrication System:

- Hold the generator rotor (1) with the special tool and tighten the oil pump drive gear nut (2) to the specified torque.

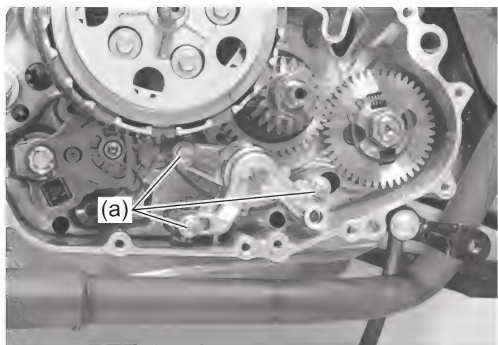
Special tool
(A): 09930-44521

Tightening torque
Oil pump drive gear nut (a): 70 N·m (7.1 kgf-m, 52.0 lbf-ft)

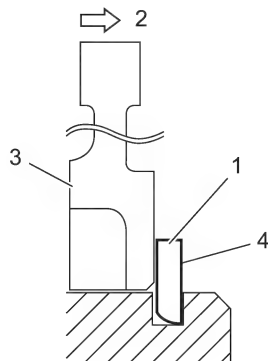


- Tighten the oil pump mounting bolts to the specified torque.

Tightening torque
Oil pump mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

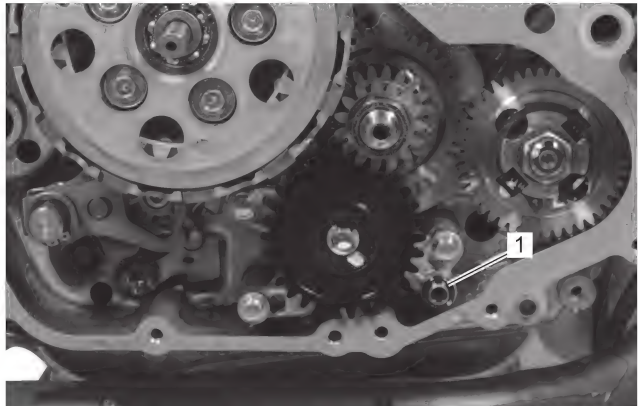


- When installing a new E-ring (1), pay attention to its direction. Fit it to the side where the thrust direction (2) is as shown in the illustration.



3. Oil pump driven gear	4. Sharp edge
-------------------------	---------------

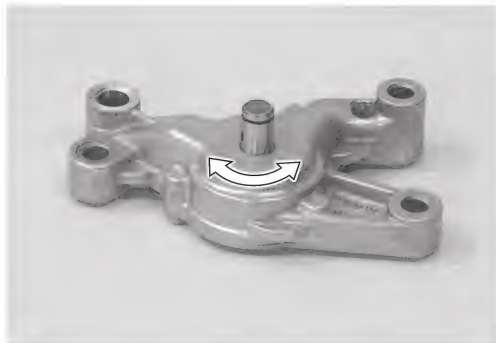
- Apply engine oil to a new O-ring (1) and install it.



Oil Pump Inspection

BENH23K21506007

Refer to “Oil Pump / Oil Pump Driven Gear / Oil Pump Drive Gear Removal and Installation” (Page 1E-8). Rotate the oil pump by hand and check that it moves smoothly. If it does not move smoothly, replace the oil pump assembly.



Specifications

Tightening Torque Specifications

BENH23K21507001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Oil gallery plug (M6)	10	1.0	7.5	☞ (Page 1E-4)
Oil drain plug	18	1.8	13.5	☞ (Page 1E-5)
Oil filter cap bolt	10	1.0	7.5	☞ (Page 1E-7)
Oil pump drive gear nut	70	7.1	52.0	☞ (Page 1E-10)
Oil pump mounting bolt	10	1.0	7.5	☞ (Page 1E-10)

Reference:

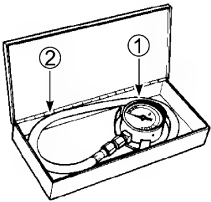
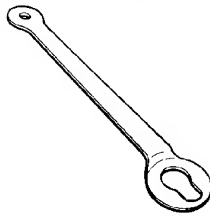
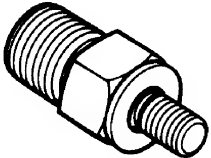
For the tightening torques of fasteners not specified in this page, refer to:

"Fasteners Information" in Section 0C (Page 0C-9)

Special Tools and Equipment

Special Tool

BENH23K21508001

09915-74511 Oil pressure gauge set (600 kPa) 1. Gauge 2. Hose ☞ (Page 1E-3)		09930-44521 Rotor holder ☞ (Page 1E-9) / ☞ (Page 1E-10)	
09940-40211 Fuel pressure gauge adapter Discontinued ☞ (Page 1E-3)			

Engine Cooling System

Precautions

Precautions for Engine Cooling System

BENH23K21600001

Refer to “General Precautions” in Section 00 (Page 00-1) and “Precautions for Electrical Circuit Service” in Section 00 (Page 00-2).

⚠ WARNING

- You can be injured by boiling fluid or steam if you open the radiator cap when the engine is hot. After the engine cools, wrap a thick cloth around cap and carefully remove the cap by turning it a quarter turn to allow pressure to escape and then turn the cap all the way off.
- The engine must be cool before servicing the cooling system.
- Coolant is harmful:
 - If it comes in contact with skin or eyes, flush with water.
 - If swallowed accidentally, do not induce vomiting and call physician immediately.
 - Keep it away from children.

Precautions for Engine Coolant

BENH23K21600002

Refer to “Fuel / Oil / Fluid / Coolant Recommendation” in Section 0C (Page 0C-11).

General Description

Engine Coolant Description

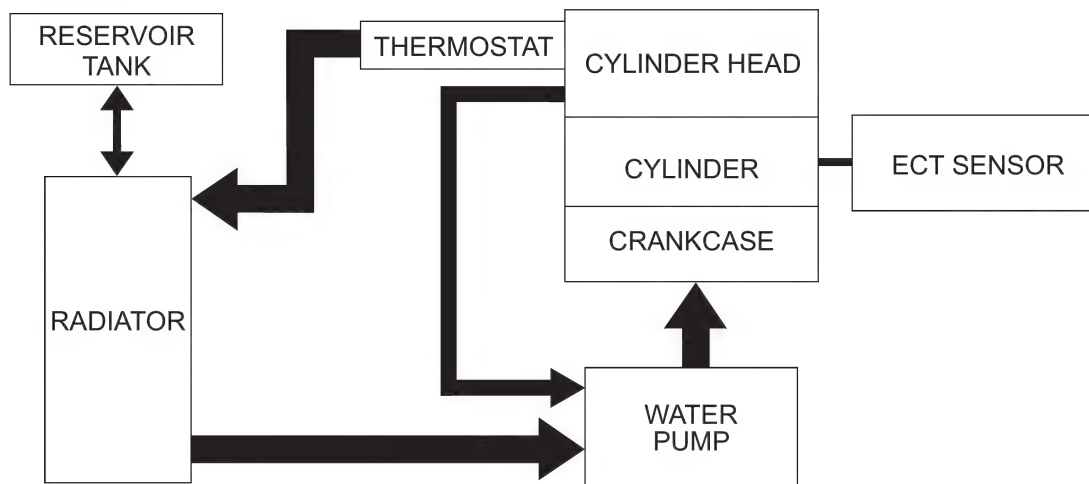
BENH23K21601001

Refer to “Fuel / Oil / Fluid / Coolant Recommendation” in Section 0C (Page 0C-11).

Schematic and Routing Diagram

Cooling Circuit Diagram

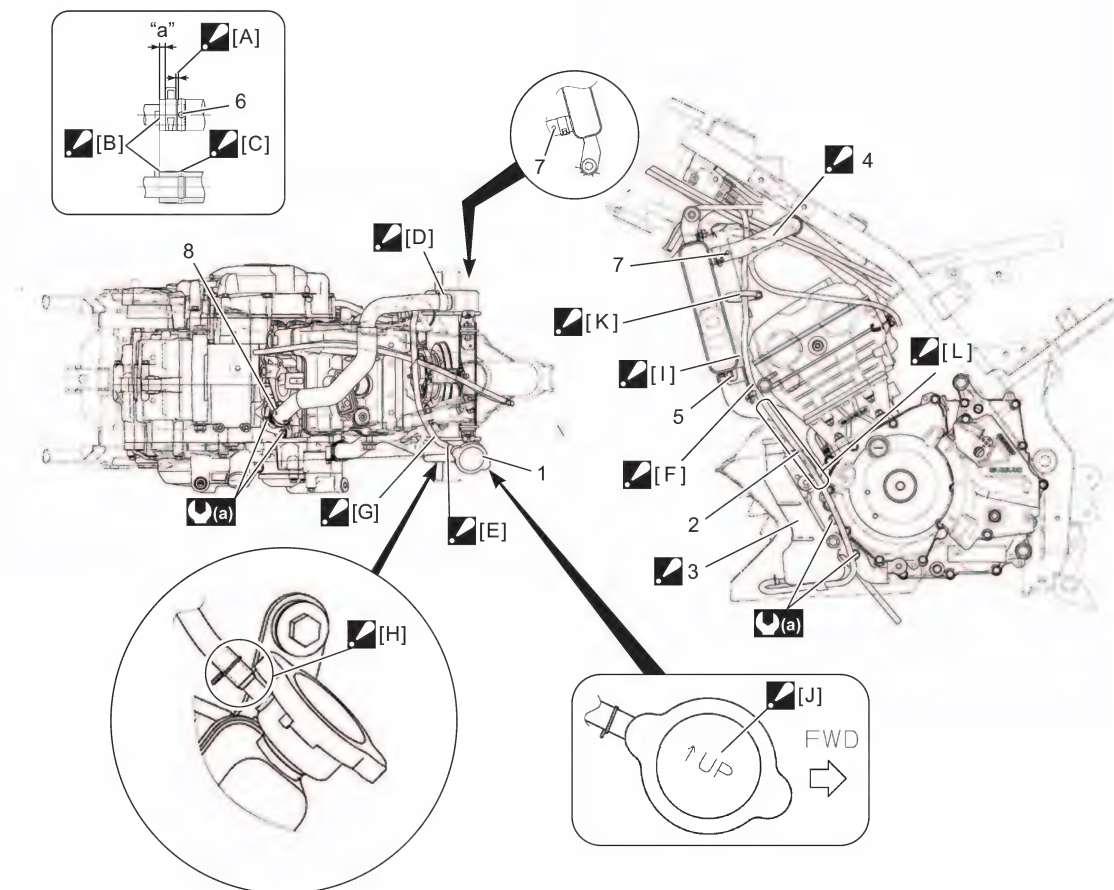
BENH23K21602001



IG12K1160001-01

Water Hose Routing Diagram

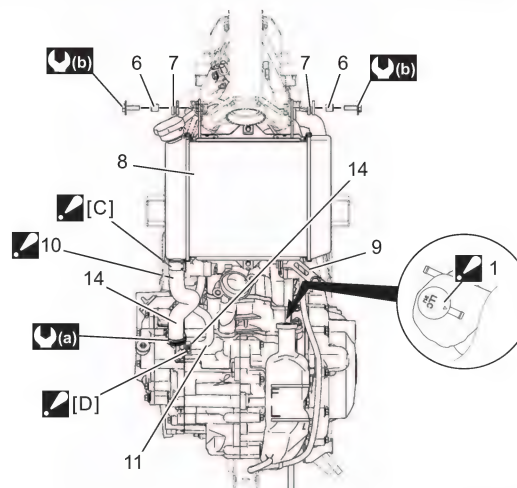
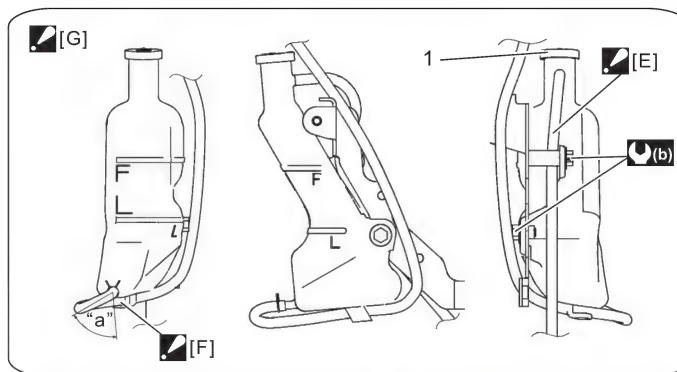
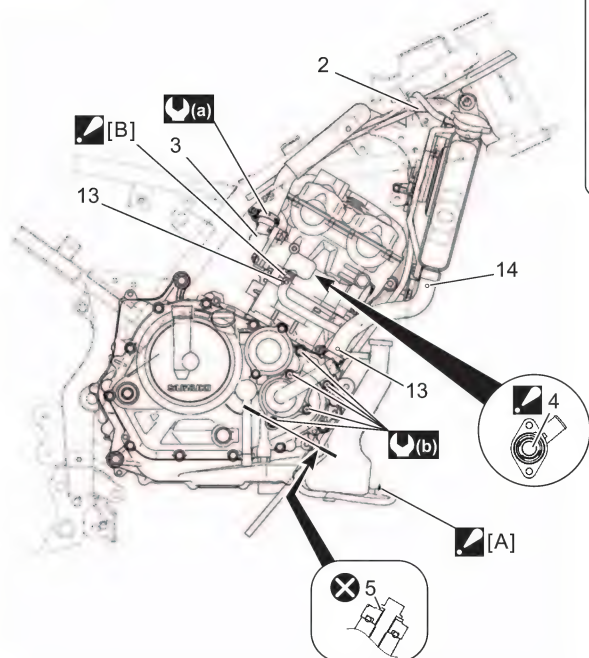
BENH23K21602002



IH23K1160040-01

[A]: Keep clearance between the clamp and match mark.	[L]: Pass the reservoir tank inlet hose pass the inside of flame
[B]: Insert the hose to the stopper.	1. Radiator cap
[C]: The match mark position on the bulge.	2. Reservoir tank overflow hose
[D]: Clamp end should face downward.	3. Reservoir tank
[E]: Clamp end should face downward.	: Bring the reservoir tank filler neck into contact with the frame.
[F]: Pass reservoir tank inlet hose pass the inside of flame	4. Radiator inlet hose
[G]: Pass the reservoir tank inlet hose over the high-tension cord.	: Face the yellow mark (7) left side and face the white mark (8) backward.
[H]: Insert the reservoir tank inlet hose until it stops at the bulge on the radiator cap nipple as shown in the figure.	5. Radiator lower cushion
[I]: Keep a clearance of more than 5 mm (0.20 in) between the frame and the radiator.	6. Match mark
[J]: Face the radiator cap letter as shown in the figure.	7. Yellow mark
[K]: Clamp the reservoir tank overflow hose, reservoir tank inlet hose and wiring harness. Do not deform the hoses.	8. White mark
	"a": 2 – 6 mm (0.08 – 0.23 in)
	(a) : 8.0 N-m (0.8 kgf-m, 5.90 lbf-ft)

1F-3 Engine Cooling System:



IH23K1160041-01

<div></div> [A]: Clamp end should face backward.	3. Thermostat cover	12. Reservoir tank
<div></div> [B]: Clamp end should face right side.	<div></div> 4. Thermostat : Face the thermostat leak hole upward.	13. White mark
<div></div> [C]: Clamp end should face left side.	5. Water pump drain bolt gasket	14. Yellow mark
<div></div> [D]: Clamp end should face forward.	6. Radiator spacer	15. Radiator outlet hose
<div></div> [E]: Pass the reservoir tank overflow hose between reservoir tank and bracket	7. Radiator cushion	"a": 65 – 75°
<div></div> [F]: Pass the reservoir tank overflow hose between reservoir tank and hook	8. Radiator	<div></div> (a) : 3.3 N·m (0.34 kgf-m, 2.45 lbf-ft)
<div></div> [G]: Face the bending point of each hose as shown in the figure.	9. Radiator lower bracket	<div></div> (b) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
<div></div> 1. Reservoir tank cap: Set cap mark to the nipple direction	<div></div> 10. Radiator outlet hose : Face the yellow mark (13) and white mark (14) right side.	<div></div> : Do not reuse.
2. Wiring harness	11. Water bypass hose	

Diagnostic Information and Procedures

Engine Cooling Symptom Diagnosis

BENH23K21604001

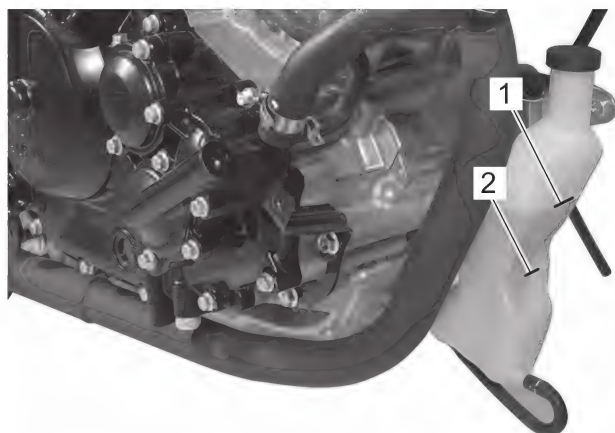
Condition	Possible cause	Correction / Reference Item
Engine overheats	Not enough engine coolant.	Add engine coolant. (Page 1F-4)
	Radiator core clogged with dirt or scale.	Clean. (Page 1F-10)
	Faulty cooling fan.	Repair or replace. (Page 1F-9)
	Defective cooling fan relay, or open-or-short circuited.	Repair or replace. (Page 1F-12)
	Clogged water passage.	Clean.
	Air trapped in the cooling circuit.	Bleed air.
	Defective water pump.	Replace. (Page 1F-14)
	Use of incorrect engine coolant.	Replace. (Page 1F-5)
	Defective thermostat.	Replace. (Page 1F-12)
	Defective ECT sensor.	Replace. (Page 1C-7)
	Defective ECM.	Replace. (Page 1C-2)
Engine over cools	Defective cooling fan relay, or open-or-short circuited.	Repair or replace. (Page 1F-12)
	Extremely cold weather.	Put on radiator cover.
	Defective thermostat.	Replace. (Page 1F-12)
	Defective ECT sensor.	Replace. (Page 1C-7)
	Defective ECM.	Replace. (Page 1C-2)

Repair Instructions

Engine Coolant Level Inspection

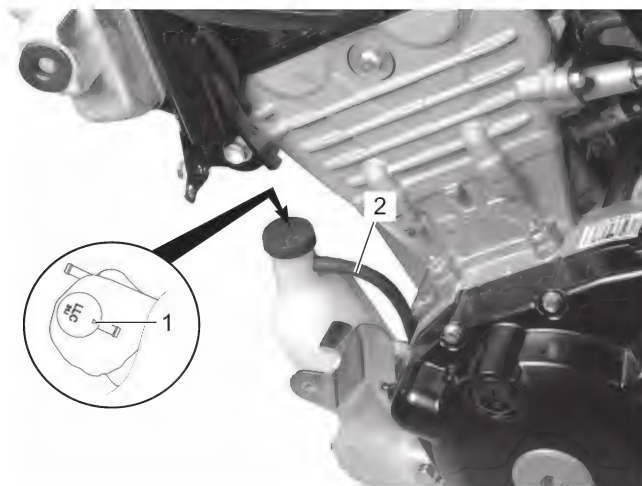
BENH23K21606001

- 1) Keep the motorcycle upright.
- 2) Check the engine coolant level by observing the full (1) and lower (2) lines on the engine coolant reservoir tank. If the level is below the lower line, remove the maintenance lid and add engine coolant to the bottom of full line from the engine coolant reservoir tank filler.



IH23K1160001-01

- 3) Install the reservoir tank cap by aligning the match mark (1) and reservoir tank overflow hose (2).



IH23K1160042-02

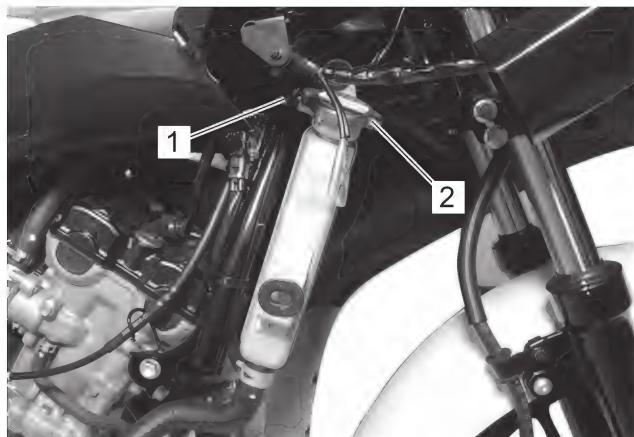
- 4) Install the maintenance lid.

Engine Coolant Replacement

BENH23K21606002

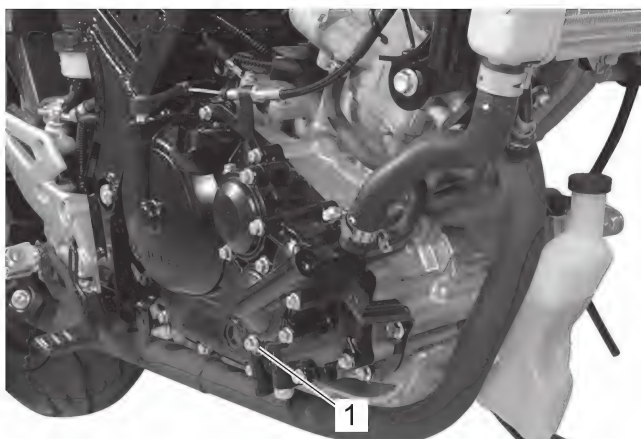
Refer to "Engine Coolant Description" (Page 1F-1).

- 1) Remove front fairing. (Page 9D-22)
- 2) Disconnect the reservoir tank inlet hose (1) and drain engine coolant in reservoir tank.
- 3) Remove the radiator cap (2).



IH23K1160002-01

- 4) Remove the water pump drain bolt (1) and drain engine coolant.

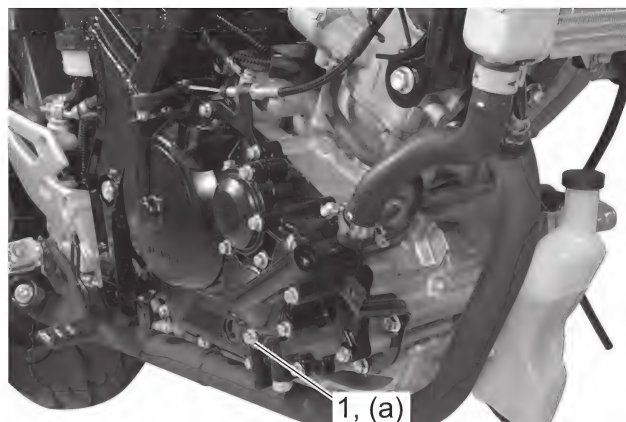


IH23K1160003-01

- 5) Flush the radiator with fresh water if necessary.
- 6) Install a new gasket washer to the water pump drain bolt (1).
- 7) Tighten the water pump drain bolt to the specified torque.

Tightening torque

Water pump drain bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



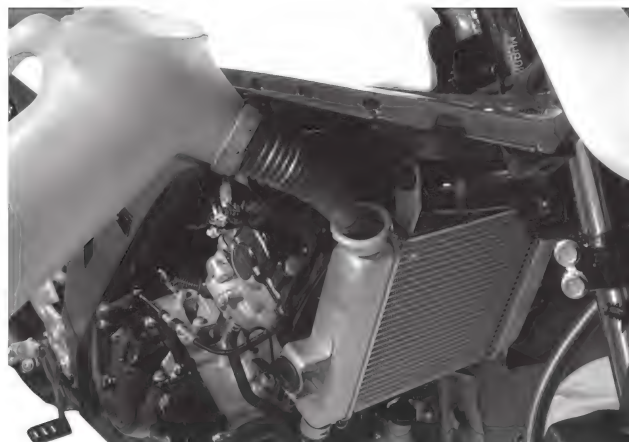
IH23K1160004-01

- 8) Connect the reservoir tank inlet hose.
- 9) Pour the specified engine coolant up to the radiator inlet.

Engine coolant

Engine side [Standard]: Approx. 1010 ml (2.13 US qt, 0.89 Imp, qt)

Reservoir tank side [Standard]: Fuel. 240 ml (0.25 US qt, 0.21 Imp, qt)



IH23K1160005-01

- 10) Install the radiator cap.
- 11) Slowly swing the motorcycle, right and left, to bleed the air trapped in the cooling circuit.
- 12) Remove the radiator cap.
- 13) Add engine coolant up to the radiator inlet.
- 14) Start up the engine and bleed air from the radiator inlet completely.
- 15) Add engine coolant up to the radiator inlet.
- 16) Repeat the 15), 16) procedures until no air bleeds from the radiator inlet.
- 17) Install the radiator cap securely. Refer to "Water Hose Routing Diagram" (Page 1F-2).
- 18) After warming up and cooling down the engine several times, add the engine coolant up to the full level of the reservoir.
- 19) Install the removed parts.

Engine Cooling System Inspection

BENH23K21606003

- 1) Drain the engine coolant in reservoir tank. Refer to "Engine Coolant Replacement" (Page 1F-5).
- 2) Remove the radiator cap (1) and connect the special tool to the filler.
- 3) Pressurize the cooling system with approx. 135 kPa (1.4 kgf/cm², 20 psi) of pressure, and then check if it holds the pressure for 10 seconds.

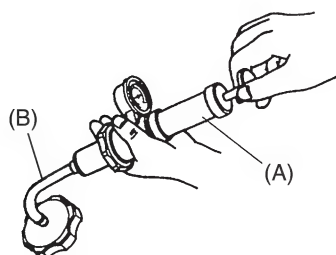
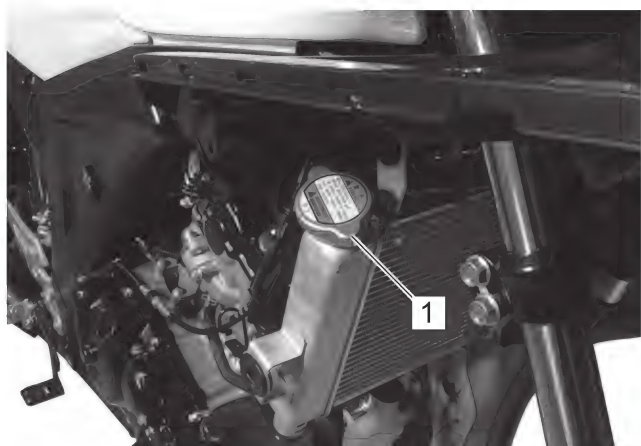
NOTICE

Do not exceed the radiator cap release pressure, or the radiator cap and subsequently the radiator, can be damaged.

Special tool

(A): 09918-78211

(B): 09918-78220



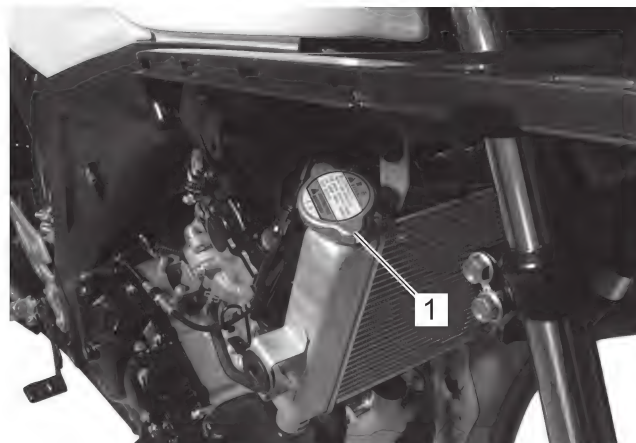
- 4) Install the removed parts. Refer to "Water Hose Routing Diagram" (Page 1F-2).

Radiator Cap Inspection

BENH23K21606004

Refer to "Engine Cooling System Inspection" (Page 1F-6).

- 1) Drain the engine coolant in reservoir tank. Refer to "Engine Coolant Replacement" (Page 1F-5).
- 2) Remove the radiator cap (1).



- 3) Attach the radiator cap (1) to the special tool as shown in the figure.
- 4) Slowly apply pressure to the radiator cap. If the radiator cap does not hold the pressure for at least 10 seconds, replace it with a new one.

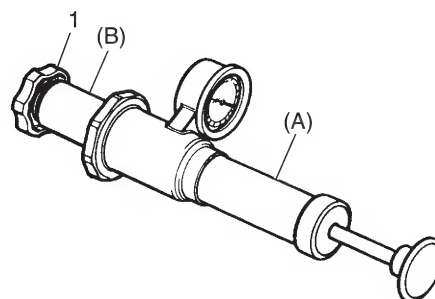
Special tool

(A): 09918-78211

(B): 09918-78220

Radiator cap valve opening pressure

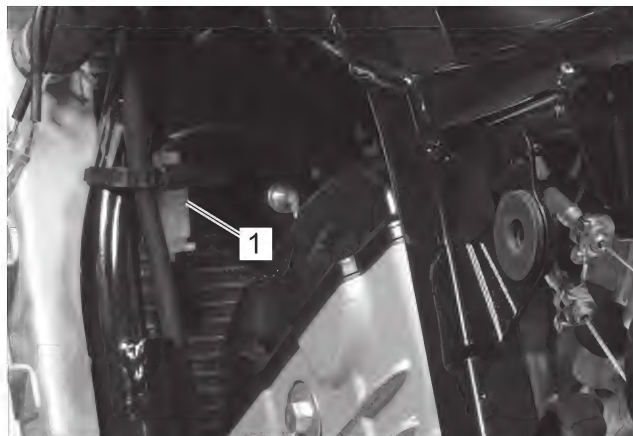
[Standard]: 107.9 – 137.3 kPa (1.1 – 1.4 kgf/cm², 15.7 – 19.9 psi)



Cooling Fan On-Vehicle Inspection

BENH23K21606005

- 1) Remove front fairing. (Page 9D-22)
- 2) Disconnect the cooling fan motor coupler (1).



IH23K1160008-01

- 3) Test the cooling fan motor (3) for load current with an ammeter (2) connected as shown in the figure. If the fan motor does not turn, replace the cooling fan assembly with a new one. (Page 1F-8)

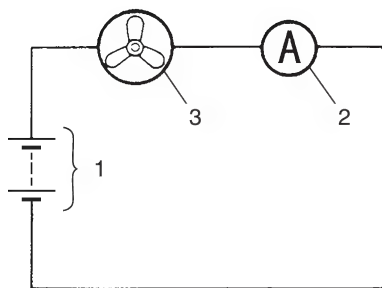
NOTE

- When carrying out this test, it is not necessary to remove the cooling fan.
- Make sure that the battery (1) is capable of supplying the motor with 12 V.
- With the motor running at full speed, the ammeter should indicate an amperage not higher than 1.3 A.

Cooling fan operating temperature

(OFF→ON) [Standard]: Approx. 105 °C (221 °F)

(ON→OFF) [Standard]: Approx. 100 °C (212 °F)



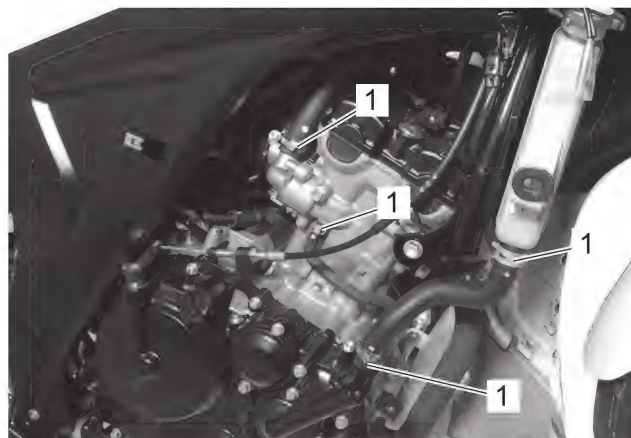
ID26J1160029-01

- 4) After finishing the cooling fan inspection, install the removed parts.

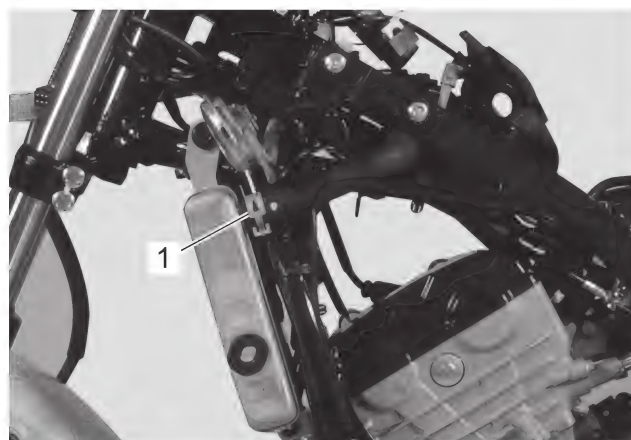
Coolant Hose Inspection

BENH23K21606006

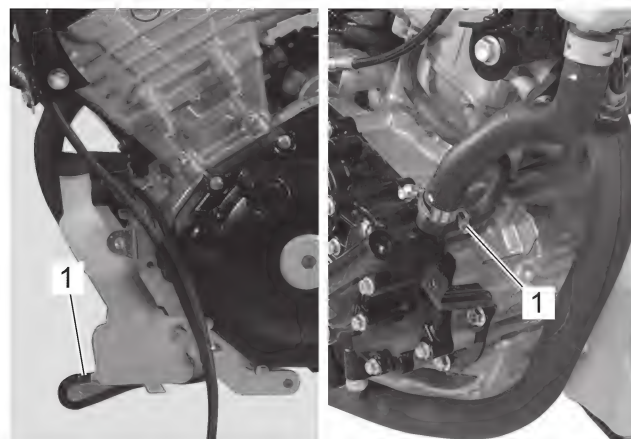
- 1) Remove front fairing. (Page 9D-22)
- 2) Check the radiator hoses for crack, damage or engine coolant leakage. If any defect is found, replace the radiator hose with a new one.
- 3) Any leakage from the connecting section (1) should be corrected by proper tightening. (Page 1F-2)



IH23K1160009-01



IH23K1160010-01



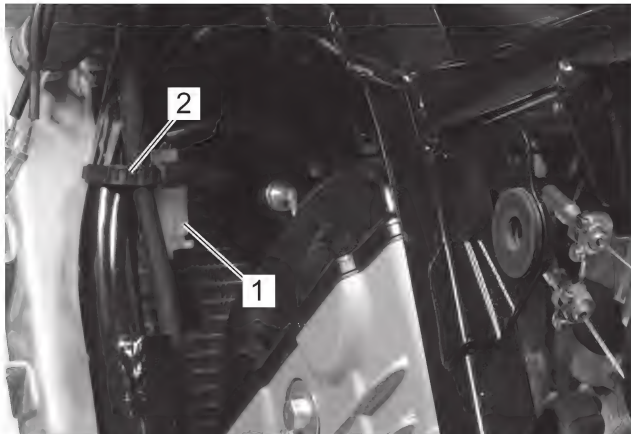
IH23K1160011-01

Radiator Removal and Installation

BENH23K21606007

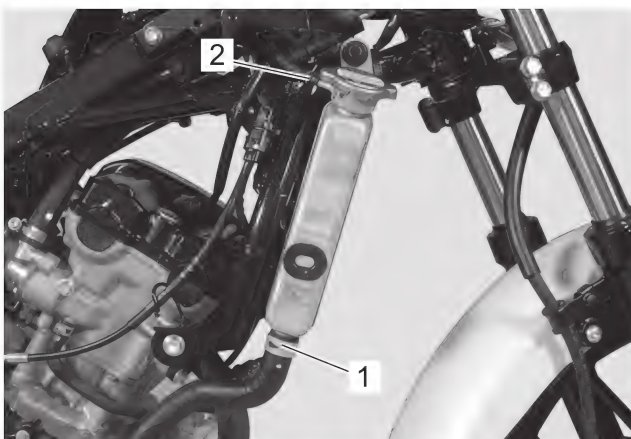
Removal

- 1) Remove front fairing. (Page 9D-22)
- 2) Drain engine coolant. (Page 1F-5)
- 3) Disconnect the radiator fan coupler (1) and clamp (2).



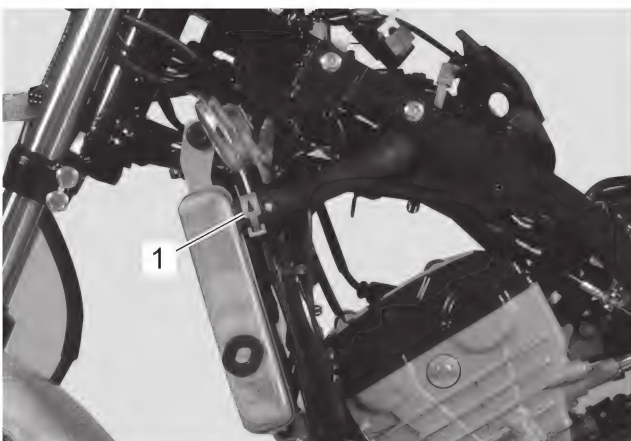
IH23K1160024-01

- 4) Disconnect the radiator outlet hose (1) and reservoir tank inlet hose (2).



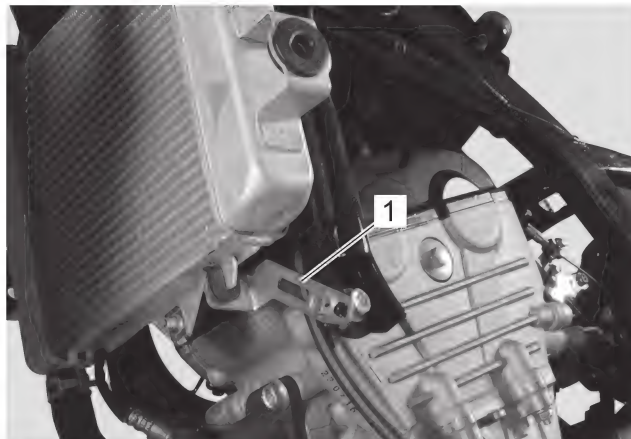
IH23K1160025-01

- 5) Disconnect the radiator inlet hose (1).



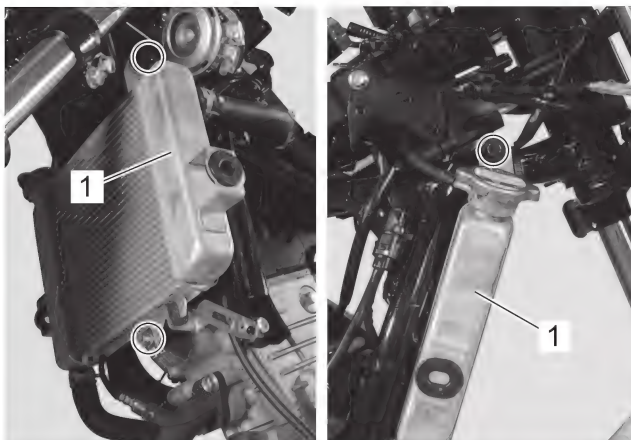
IH23K1160026-01

- 6) Remove the radiator lower bracket (1).



IH23K1160020-02

- 7) Remove the radiator (1).



IH23K1160027-01

- 8) Remove the radiator fan assembly.

Installation

Install the radiator in the reverse order of removal. Pay attention to the following points:

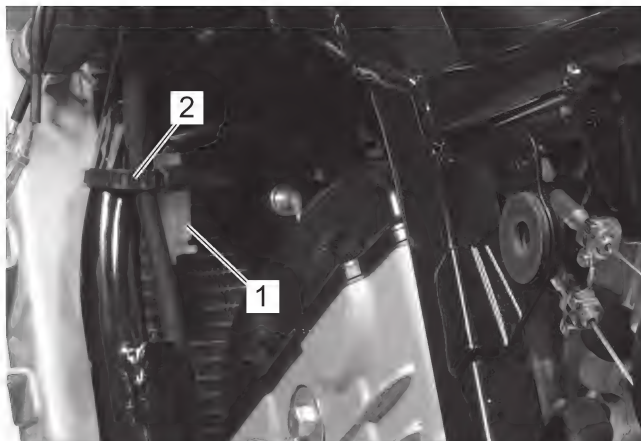
- Tighten the radiator fan assembly mounting bolts, radiator mounting bolts and radiator lower bracket bolt to the specified torque. (Page 1F-9)
- Connect the radiator hoses securely. Refer to "Water Hose Routing Diagram" (Page 1F-2).
- Pour engine coolant. Refer to "Engine Coolant Replacement" (Page 1F-5).

Radiator Fan Assembly Removal and Installation

BENH23K21606008

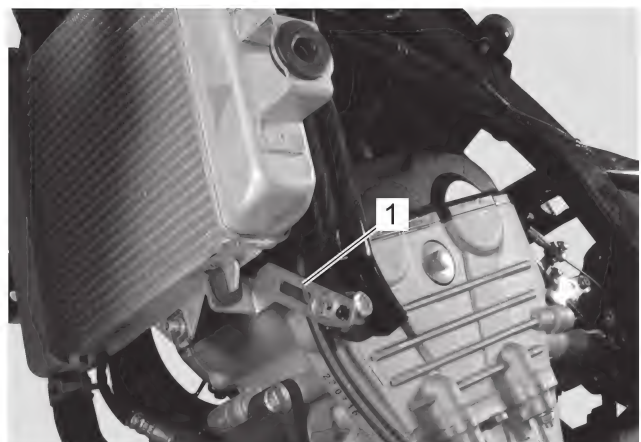
Removal

- 1) Remove front fairing. (Page 9D-22)
- 2) Disconnect the radiator fan coupler (1) and clamp (2).



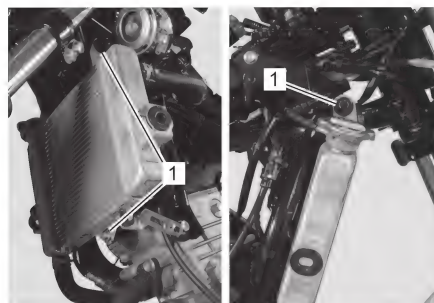
IH23K1160012-01

- 3) Remove the radiator lower bracket (1).



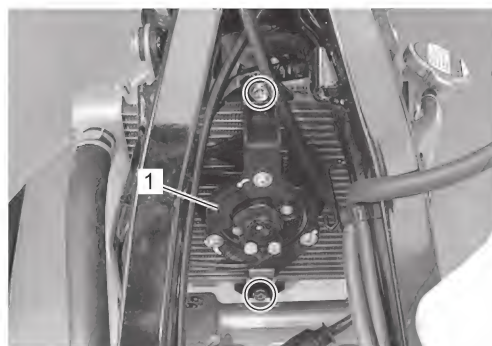
IH23K1160020-02

- 4) Loosen the radiator bolts (1).



IH23K1160021-01

- 5) Remove the radiator fan assembly (1).



IG12K1160018-01

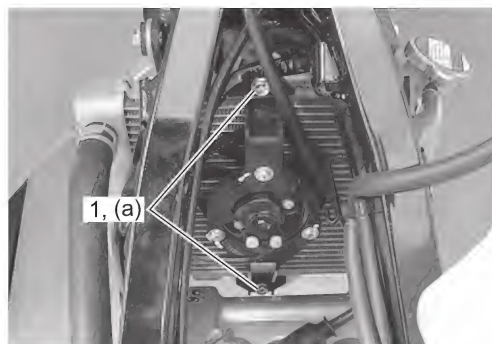
Installation

Install the radiator fan motor in the reverse order of removal. Pay attention to the following points:

- Tighten the radiator fan assembly mounting bolts (1) to the specified torque.

Tightening torque

Radiator fan assembly mounting bolt (a): 8.5 N·m (0.86 kgf-m, 6.30 lbf-ft)



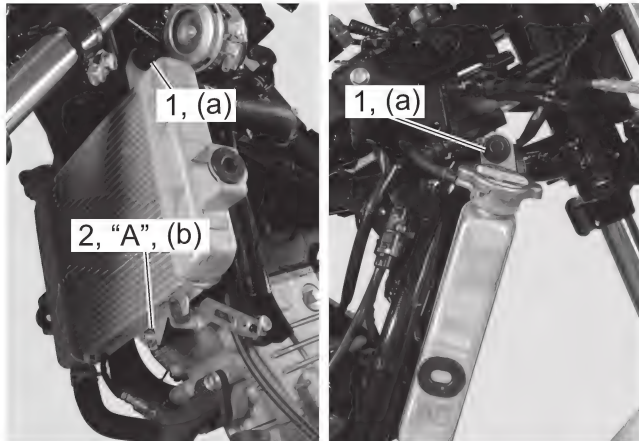
IG12K1160019-01

- Tighten the radiator mounting bolts (1) to the specified torque.

“A”: Thread lock cement 99000–32150 (THREAD LOCK CEMENT 1322D)

Tightening torque

Radiator mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

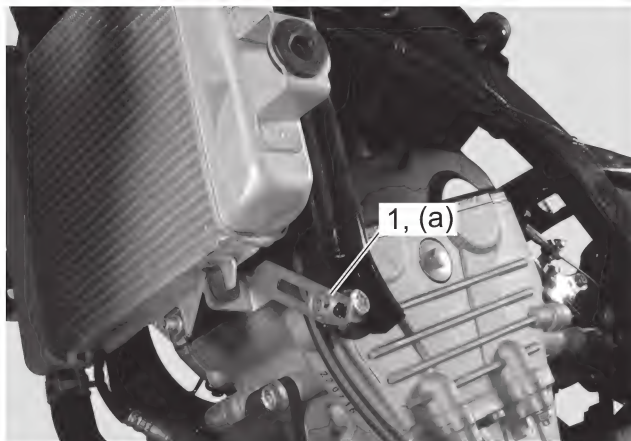


IH23K1160022-01

- Tighten the radiator lower bracket bolt (1) to the specified torque.

Tightening torque

Radiator lower bracket bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



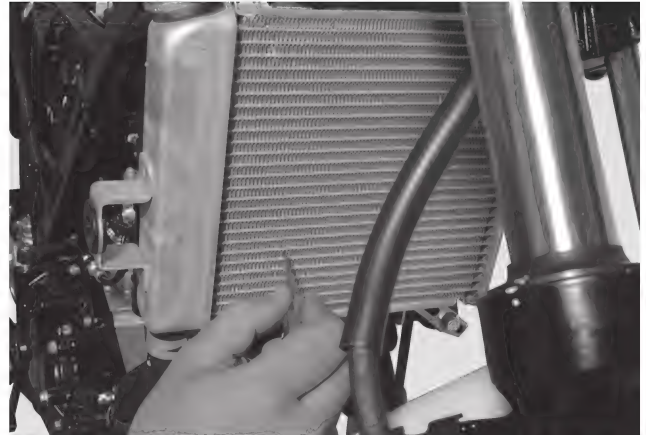
IH23K1160023-01

Radiator Inspection and Cleaning

BENH23K21606009

Inspection

- 1) Remove front fairing. (Page 9D-22)
- 2) Inspect the radiator for coolant leaks. If any defects are found, replace the radiator with a new one.
- 3) If the fins are bent or dented, repair them by carefully straightening them with the blade of a small screwdriver.



IH23K1160028-01

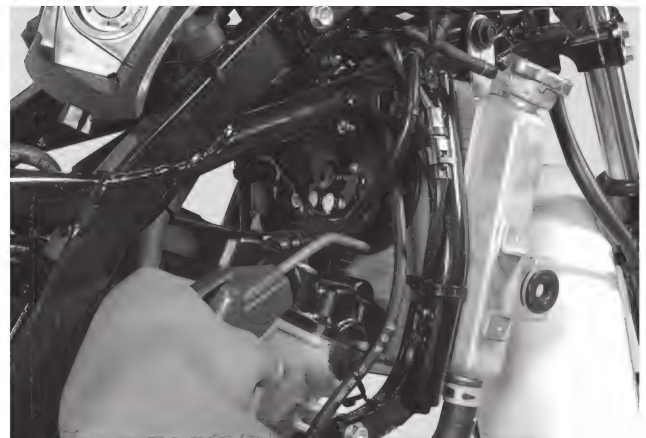
- 4) Install the removed parts.

Cleaning

- 1) Remove front fairing. (Page 9D-22)
- 2) Blow out any foreign matter that is stuck in the radiator fins using compressed air.

NOTICE

- Do not bend the fins when using compressed air.
- Apply compressed air from the engine side. If compressed air is applied from the other side, dirt will be forced into the pores of radiator.

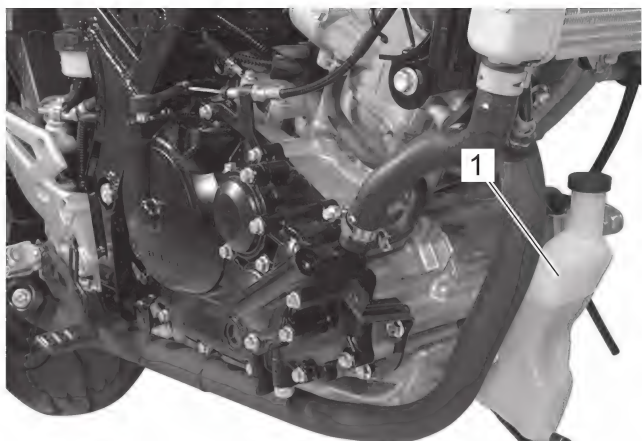


IH23K1160029-01

Radiator Reservoir Tank Inspection

BENH23K21606010

- 1) Remove front fairing. (Page 9D-22)
- 2) Inspect the radiator reservoir tank (1) coolant leaks. If any defects are found, replace the radiator reservoir tank with a new one.



IH23K1160030-01

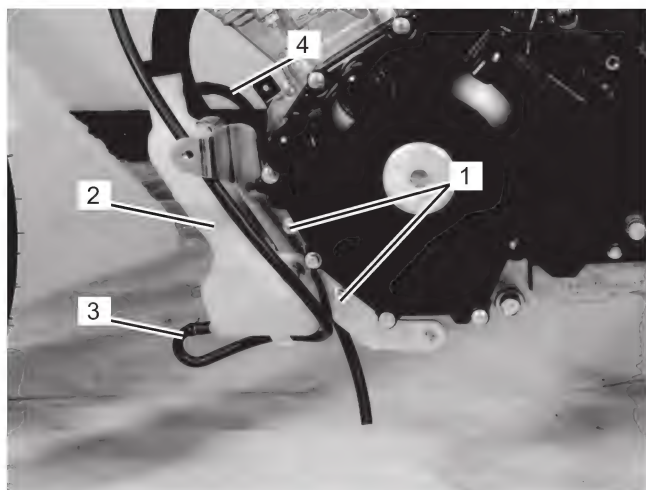
- 3) Install the removed parts.

Radiator Reservoir Tank Removal and Installation

BENH23K21606011

Removal

- 1) Remove front fairing. (Page 9D-22)
- 2) Remove the reservoir tank bolt (1) and reservoir tank (2).
- 3) Disconnect the reservoir tank inlet hose (3) and drain engine coolant.
- 4) Disconnect the reservoir tank overflow hose (4).



IH23K1160043-02

Installation

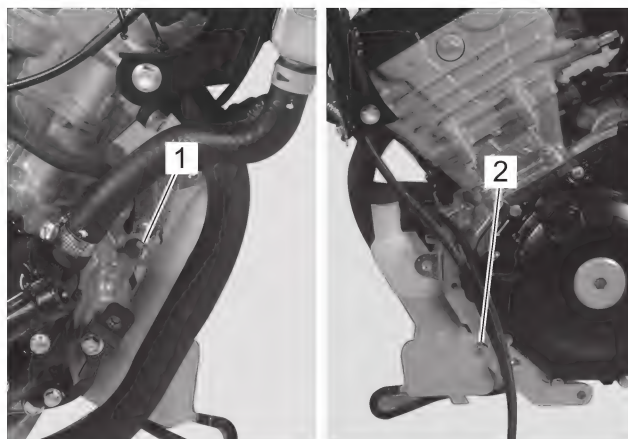
Install radiator reservoir tank in the reverse order of removal. Pay attention to the following points:

- Apply thread lock to the reservoir tank bolt (1) and tighten it (1) to the specified torque.

“A”: Thread lock cement 99000-32150 (THREAD LOCK CEMENT 1322D)

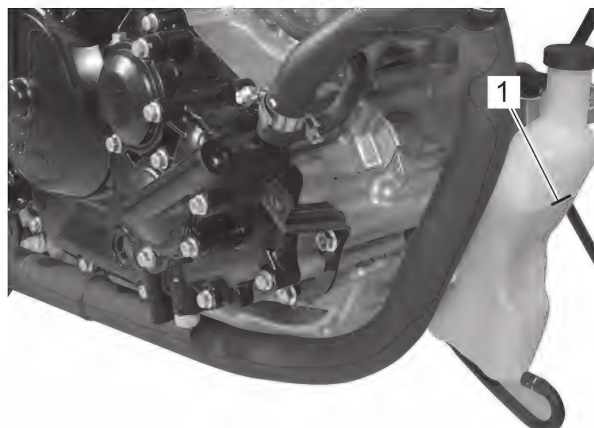
Tightening torque

Reservoir tank bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IH23K1160031-01

- Fill the reservoir tank to the upper level (1). (Page 1F-4)



IH23K1160032-01

Coolant Hose Removal and Installation

BENH23K21606012

Removal

- 1) Drain engine coolant. (Page 1F-5)
- 2) Remove the water hose. (Page 1F-2)

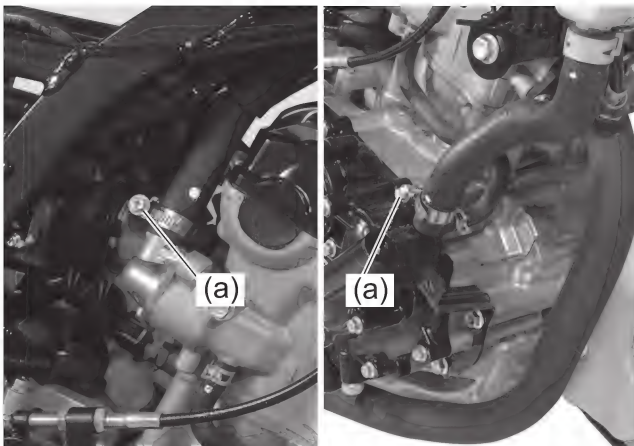
Installation

Install the coolant hose in the reverse order of removal. Pay attention to the following points:

- Connect the water hoses securely. Refer to "Water Hose Routing Diagram" (Page 1F-2).
- Tighten the radiator hose clamp screws to the specified torque.

Tightening torque

Radiator hose clamp screw (a): 3.3 N·m (0.34 kgf-m, 2.45 lbf-ft)

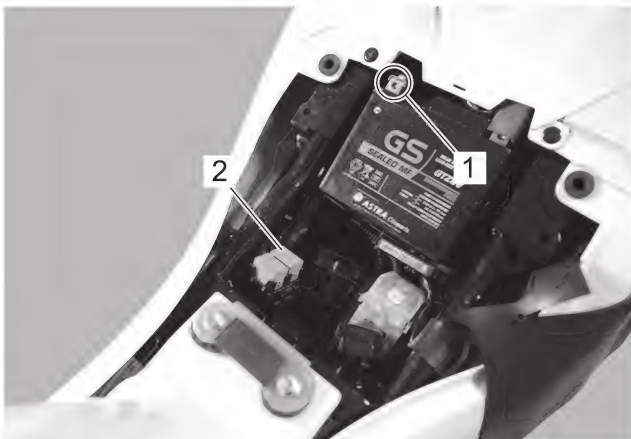


IH23K1160033-01

Cooling Fan Relay Inspection

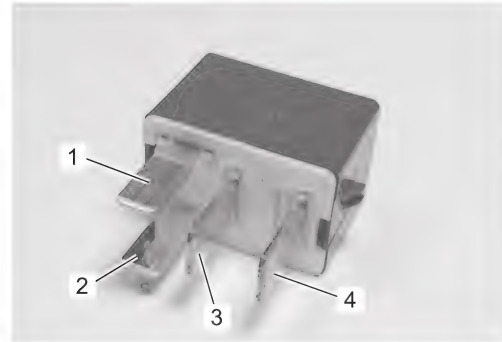
BENH23K21606013

- 1) Open front seat. (Page 9D-20)
- 2) Disconnect the battery (-) lead wire (1) and remove the cooling fan relay (2).



IH23K1160034-01

- 3) First check the insulation between (3) and (4) terminals with a circuit tester. Then apply 12 V to (1) and (2) terminals, (+) to (1) and (-) to (2), and check the continuity between (3) and (4).
If there is no continuity, replace it with a new one.



IE31J1160038-01

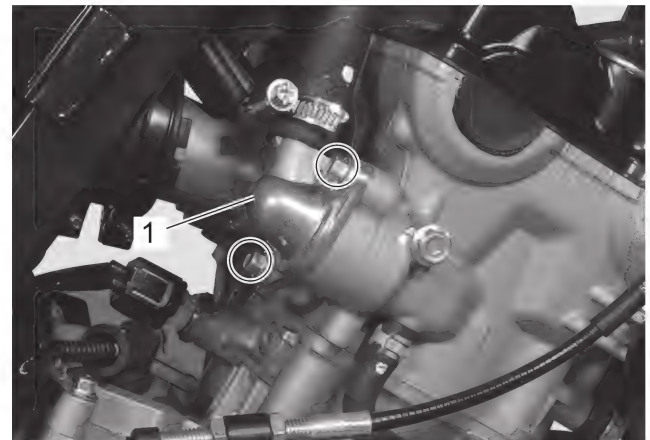
- 4) Install the removed parts.

Thermostat Removal and Installation

BENH23K21606014

Removal

- 1) Drain engine coolant. (Page 1F-5)
- 2) Place a rag under the thermostat cover (1) and then remove the thermostat cover.



IH23K1160036-01

- 3) Remove the thermostat (1).



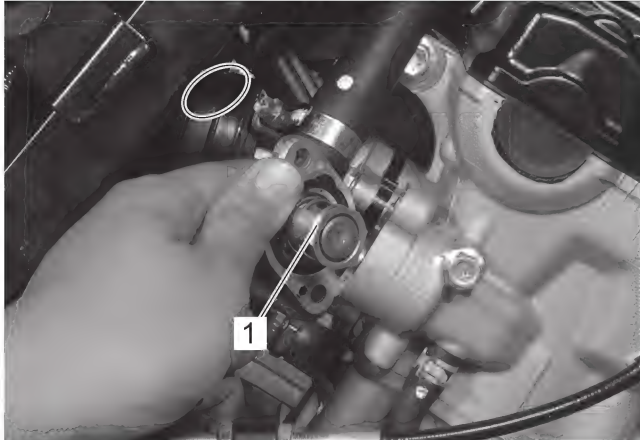
IH23K1160037-01

1F-13 Engine Cooling System:

Installation

Install the thermostat in the reverse order of removal. Pay attention to the following points:

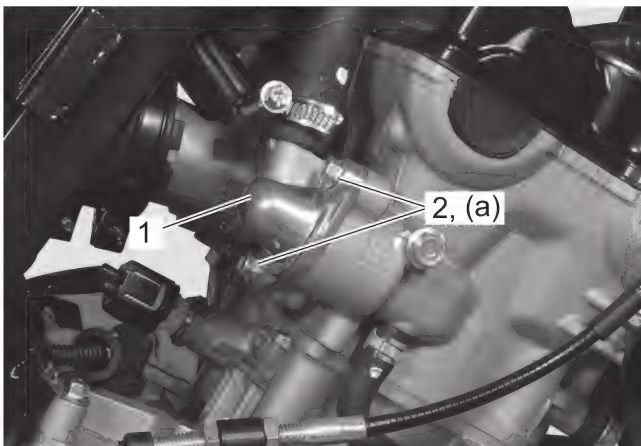
- Install the thermostat (1) to thermostat cover.



- Install the thermostat cover (1) and tighten the bolts (2) to the specified torque.

Tightening torque

Thermostat cover bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



- Pour engine coolant and bleed air from the cooling system. Refer to "Engine Coolant Replacement" (Page 1F-5).

Thermostat Inspection

BENH23K21606015

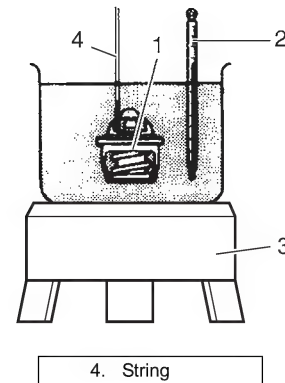
- 1) Inspect the thermostat pellet for signs of cracking.
- 2) Test the thermostat at the bench for control action.

NOTE

- Do not contact the thermostat (1) and the column thermometer (2) with a pan.
- As the thermostat operating response to water temperature change is gradual, do not raise water temperature too quickly.

- The thermostat with its valve open even slightly under normal temperature must be replaced.

- 3) Immerse the thermostat in the water contained in a beaker and note that the immersed thermostat is in suspension.
- 4) Heat the water by placing the beaker on a heater (3) and observe the rising temperature on a thermometer.



- 5) Read the thermometer just when opening the thermostat. If this reading, which is the temperature level at which the thermostat valve begins to open, is out of the standard value, replace the thermostat with a new one.

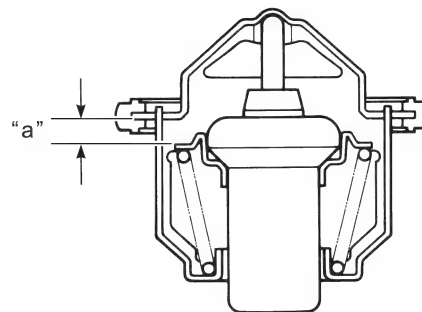
Thermostat valve opening temperature

[Standard]: 88.5 – 89.5 °C (191.3 – 193.1 °F)

- 6) Keep on heating the water to raise its temperature.
- 7) Just when the water temperature reaches specified value, the thermostat valve should have been lifted by at least 8 mm (0.3 in) "a". A thermostat failing to satisfy either of the two requirements (start-to-open temperature and valve lift) must be replaced.

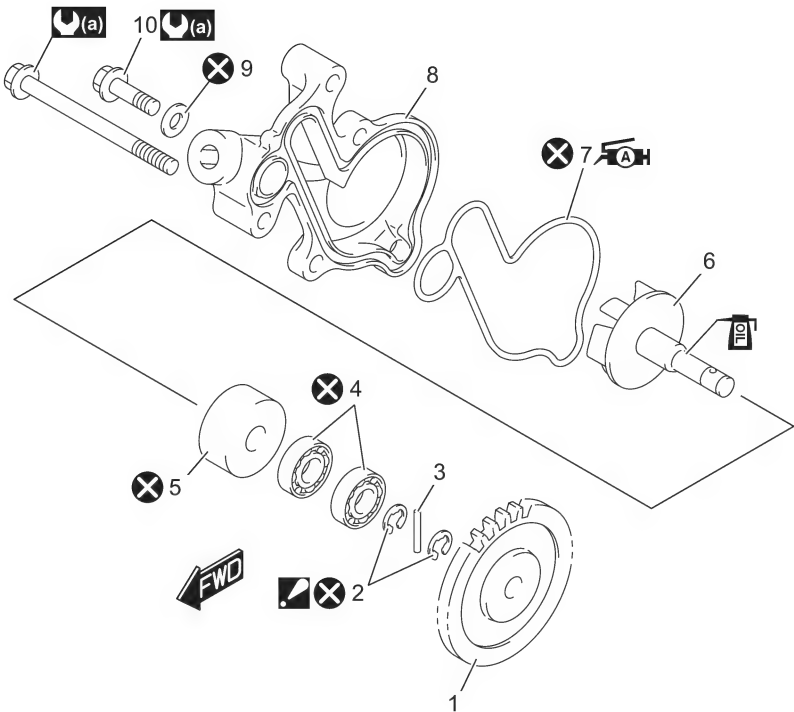
Thermostat valve lift

At 100 °C (212 °F) [Standard]: 3.0 mm (0.11 in) or more



Water Pump Assembly Components

BENH23K21606016



IG12K1160036-04

1. Water pump driven gear	6. Impeller/water pump shaft	: Apply grease to the O-ring.
2. E-ring : For installation, refer to "Water Pump Removal and Installation" (Page 1F-14).	7. O-ring	: 10 N·m (1.0 kgf·m, 7.5 lbf·ft)
3. Pin	8. Water pump case	: Do not reuse.
4. Bearing	9. Water pump drain bolt gasket	
5. Water pump shaft oil seal	: Apply engine oil.	

Water Pump Removal and Installation

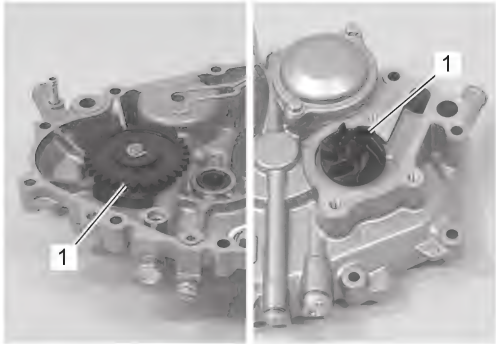
BENH23K21606017

Removal

- 1) Remove the clutch cover. (Page 5C-6)

NOTE

Water pump (1) is built in the clutch cover.



IG12K1160037-01

Installation

Install the water pump in the reverse order of removal.

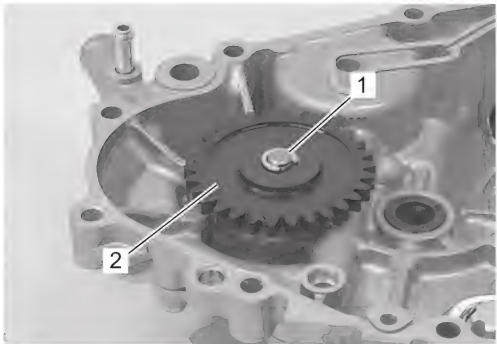
Water Pump Disassembly and Reassembly

BENH23K21606018

Refer to "Water Pump Removal and Installation" (Page 1F-14).

Disassembly

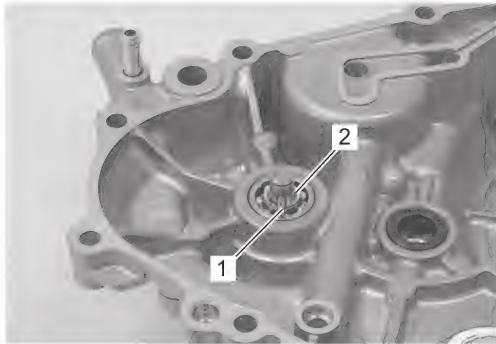
- 1) Remove the E-ring (1) and water pump driven gear (2).



IG12K1160038-01

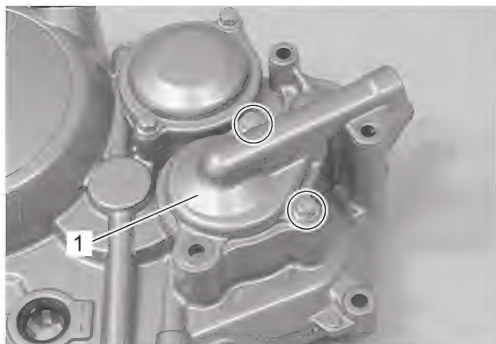
1F-15 Engine Cooling System:

2) Remove the pin (1) and E-ring (2).



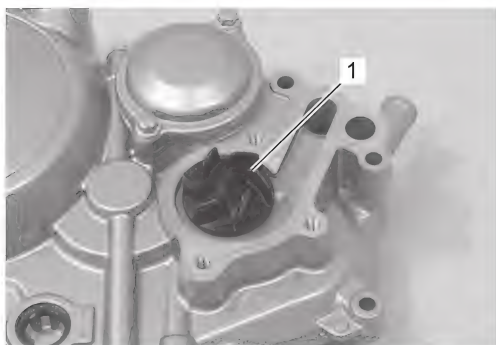
IG12K1160039-01

3) Remove the water pump case (1).



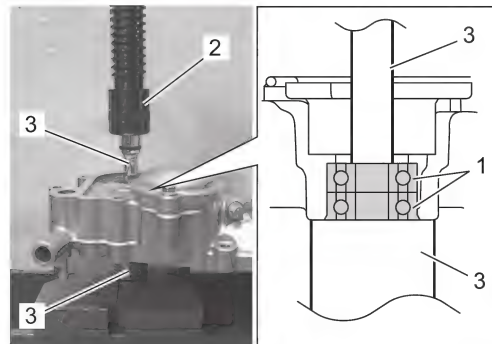
IG12K1160040-02

4) Remove the impeller/water pump shaft (1).



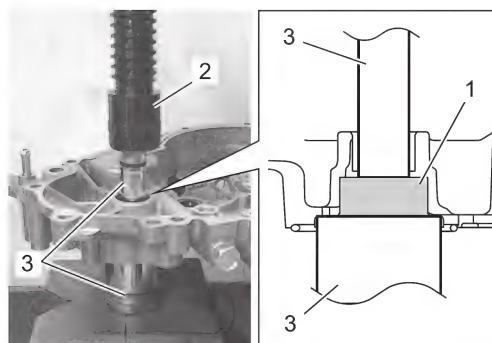
IG12K1160041-01

5) Remove the water pump bearings (1) using hydraulic press (2) and suitable tools (3).



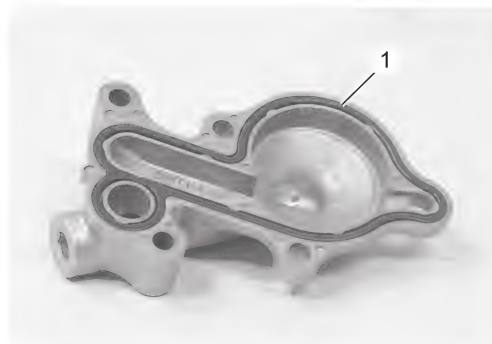
IG12K1160042-01

6) Remove the oil seal (1) using hydraulic press (2) and suitable tools (3).



IG12K1160043-01

7) Remove the O-ring (1).



IG12K1160059-01

Reassembly

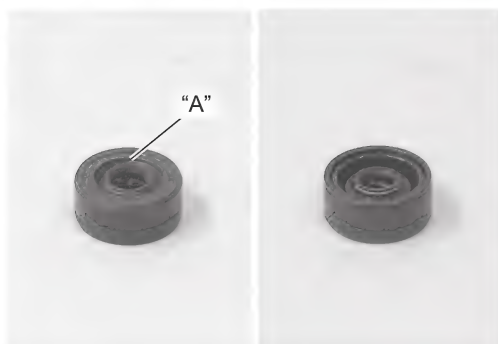
- 1) Install a new oil seal (1) with the special tool.

NOTE

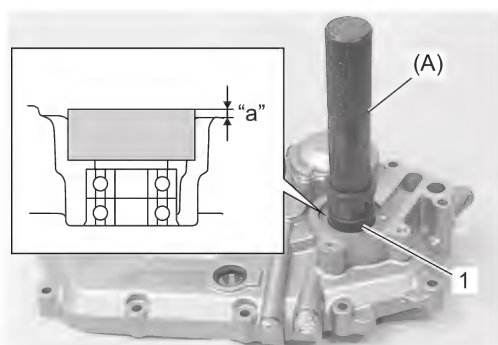
Face the flat side "A" of the oil seal to the impeller seal side.

Special tool

(A): 09913-70210



IG12K1160045-01



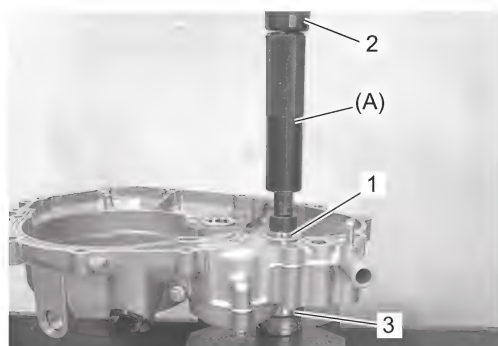
IG12K1160046-02

"a": Max. 1.0 mm (0.04 in)

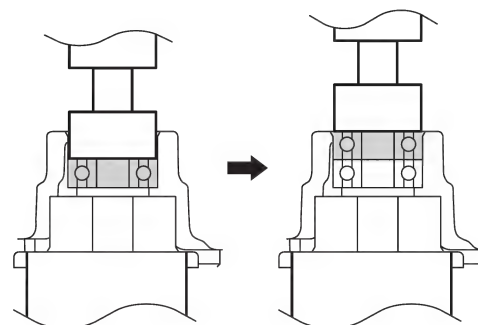
- 2) Apply engine oil to the oil seal lip.
- 3) Install new water pump bearings (1) one by one using hydraulic press (2) and suitable tool (3).

Special tool

(A): 09913-50121

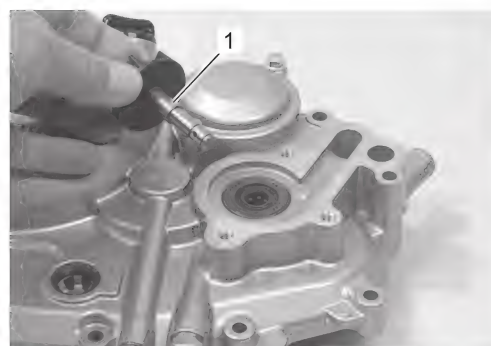


IG12K1160047-01



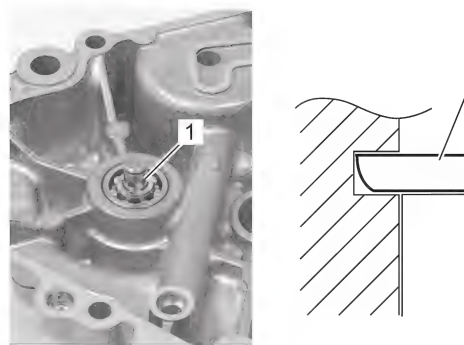
IG12K1160049-01

- 4) Apply engine oil to the impeller/water pump shaft (1) and install it to the clutch cover.



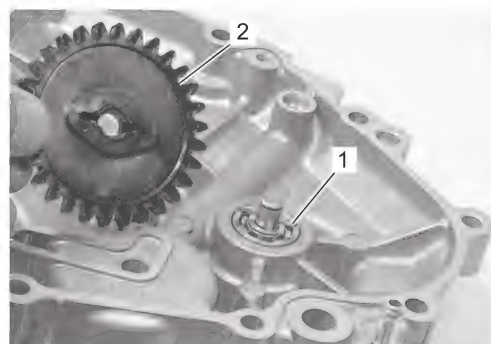
IG12K1160048-02

- 5) Install a new E-ring (1) as shown in the illustration.



IG12K1160050-01

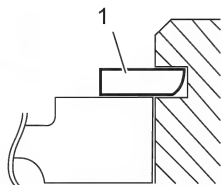
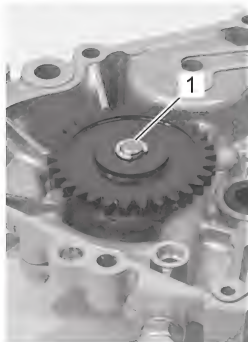
- 6) Install the pin (1) and water pump driven gear (2).



IG12K1160051-01

1F-17 Engine Cooling System:

- 7) Install a new E-ring (1) as shown in the illustration.

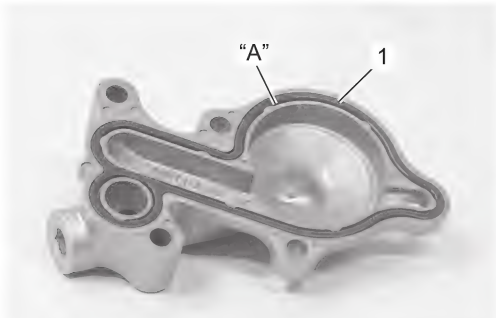


IG12K1160052-02

- 8) Apply grease to a new O-ring (1).

“A”: Grease 99000–25011 (SUZUKI SUPER GREASE A)

- 9) Install the O-ring to the water pump case.



IG12K1160044-03

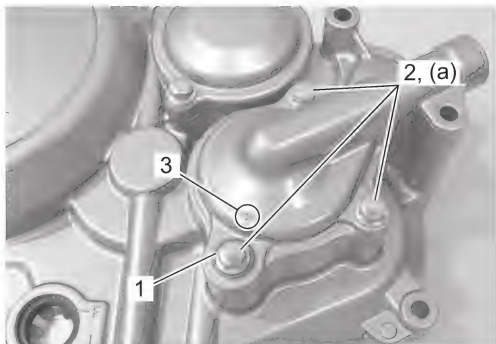
- 10) Install a new gasket washer (1) and tighten the water pump case bolts (2) to the specified torque.

NOTE

Gasket washer is installed near the triangle mark (3).

Tightening torque

Water pump case bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IG12K1160053-02

Water Pump Related Parts Inspection

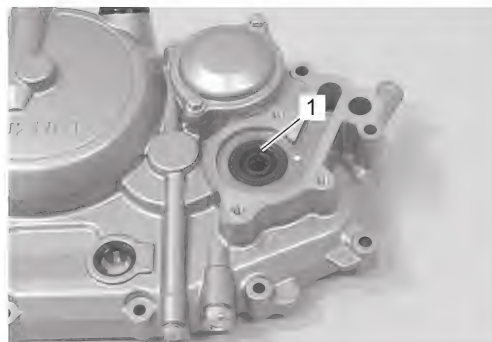
BENH23K21606019

Refer to “Water Pump Disassembly and Reassembly” (Page 1F-14).

Oil Seal

Visually inspect the oil seal (1) for damage, with particular attention given to the lip.

Replace the oil seal that shows indications of leakage.



IG12K1160054-01

Impeller/Water Pump Shaft

Visually inspect the impeller (1) and its shaft for damage.

Replace the impeller/water pump shaft if necessary.



IG12K1160055-02

Water Pump Bearing

Rotate the inner race by hand to inspect for abnormal noise and smooth rotation.

Replace the bearings if there is anything unusual.



IG12K1160056-01

Specifications

Tightening Torque Specifications

BENH23K21607001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Water pump drain bolt	10	1.0	7.5	☞ (Page 1F-5)
Radiator fan assembly mounting bolt	8.5	0.86	6.30	☞ (Page 1F-9)
Radiator mounting bolt	10	1.0	7.5	☞ (Page 1F-10)
Radiator lower bracket bolt	10	1.0	7.5	☞ (Page 1F-10)
Reservoir tank bolt	10	1.0	7.5	☞ (Page 1F-11)
Radiator hose clamp screw	3.3	0.34	2.45	☞ (Page 1F-12)
Thermostat cover bolt	10	1.0	7.5	☞ (Page 1F-13)
Water pump case bolt	10	1.0	7.5	☞ (Page 1F-17)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Water Hose Routing Diagram” (Page 1F-2)

“Water Pump Assembly Components” (Page 1F-14)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K21608001

Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI SUPER GREASE A	P/No.: 99000-25011	☞ (Page 1F-17)
Thread lock cement	THREAD LOCK CEMENT 1322D	P/No.: 99000-32150	☞ (Page 1F-10) / ☞ (Page 1F-11)

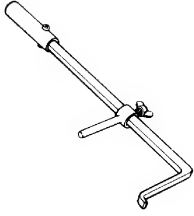
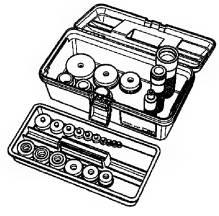
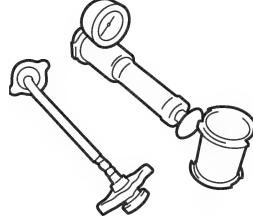
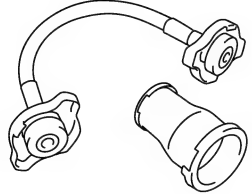
NOTE

Required service material(s) is also described in:

“Water Pump Assembly Components” (Page 1F-14)

Special Tool

BENH23K21608002

09913-50121 Oil seal remover ☞ (Page 1F-16) 	09913-70210 Bearing installer set ☞ (Page 1F-16) 
09918-78211 Radiator cap tester kit ☞ (Page 1F-6) / ☞ (Page 1F-6) 	09918-78220 Radiator cap tester adapter ☞ (Page 1F-6) / ☞ (Page 1F-6) 

Fuel System

Precautions

Precautions for Fuel System

BENH23K21700001

⚠ WARNING

- Keep away from fire or spark.
 - During disassembling, use care to minimize spillage of gasoline.
 - Spilled gasoline should be wiped off immediately.
 - Work in a well-ventilated area.
-

NOTICE

- To prevent the fuel system (fuel tank, fuel hose, etc.) from contamination with foreign particles, blind all openings.
 - After removing the throttle body, tape the cylinder intake section to prevent foreign particles from entering.
-

General Description

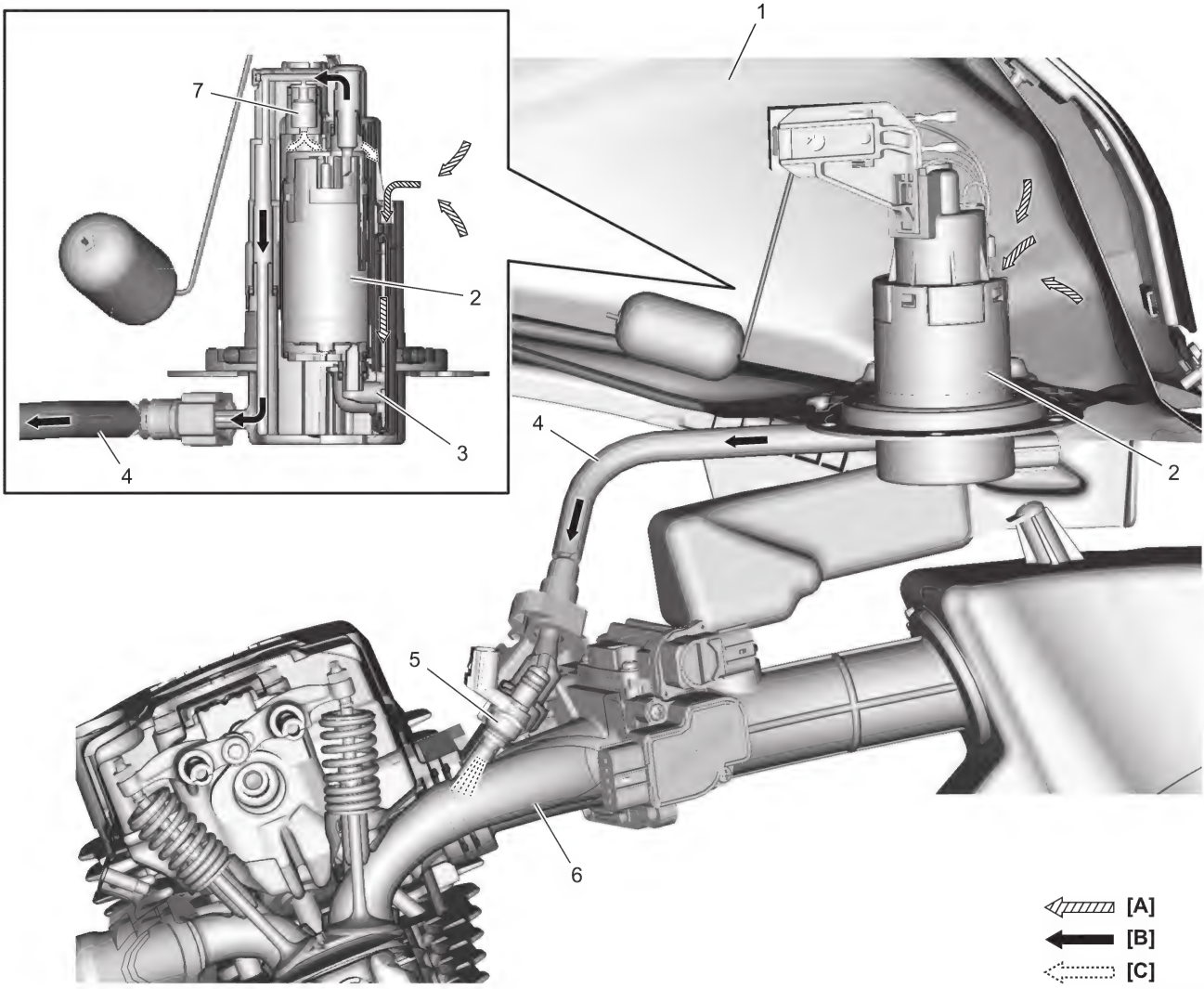
Fuel System Description

BENH23K21701001

Fuel System

The fuel delivery system consists of the fuel tank (1), fuel pump (2) (including fuel pressure regulator (7) and fuel mesh filter (3)), fuel feed hose (4) and fuel injector (5). There is no fuel return hose. The fuel in the fuel tank is pumped up by the fuel pump and pressurized fuel flows into the injector installed on the intake pipe (6). Fuel pressure is regulated by the fuel pressure regulator. As the fuel pressure applied to the fuel injector is always kept at the specified level and the fuel is injected into the intake pipe in conic dispersion when injector opens according to the injection signal from the ECM.

The fuel relieved by the fuel pressure regulator flows back to the fuel tank.



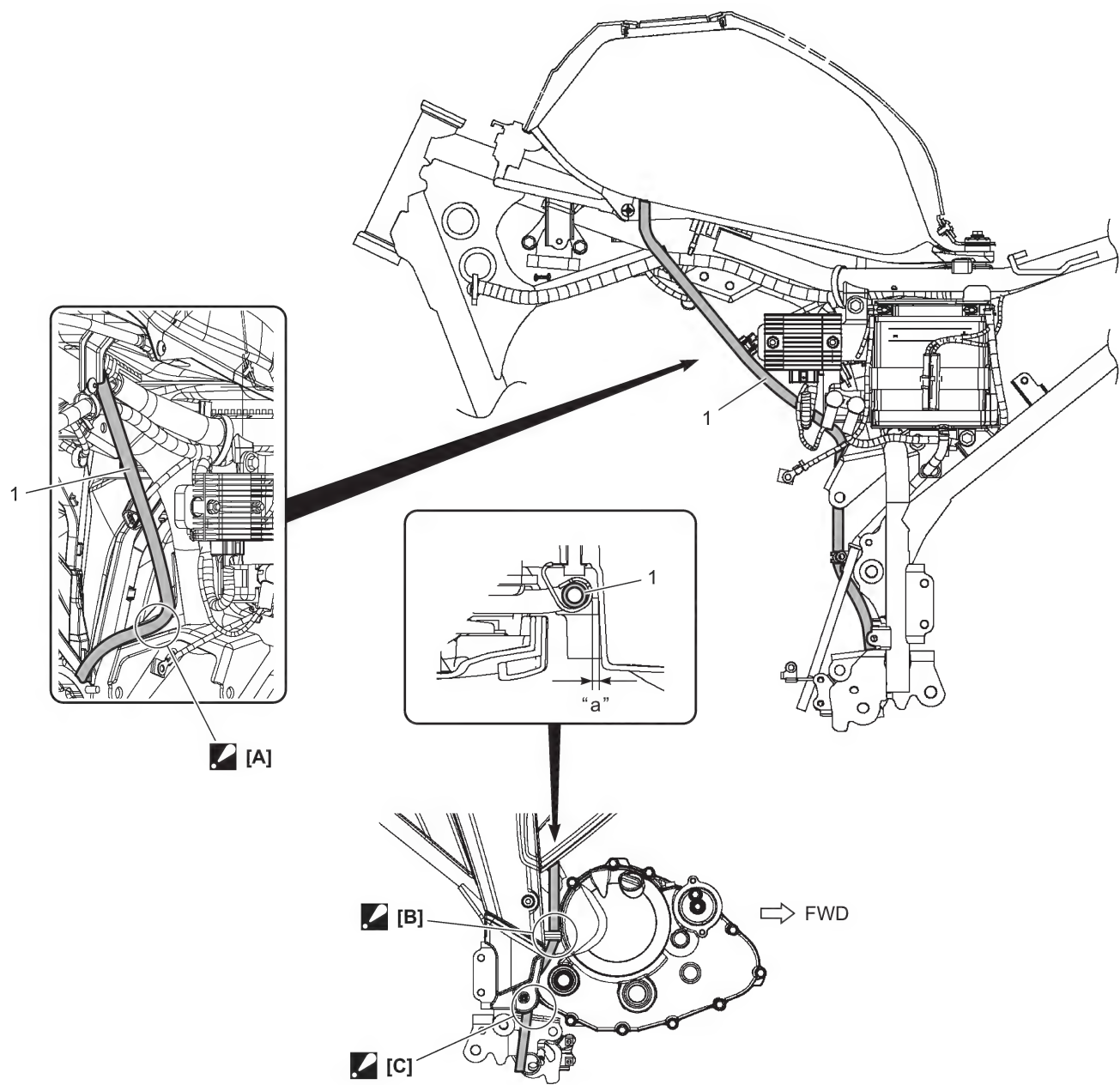
IG34J1172001-02

[A]: Before-pressurized fuel	[B]: Pressurized fuel	[C]: Relieved fuel
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Schematic and Routing Diagram

Fuel Tank Water Drain Hose Routing Diagram

BENH23K21702001



IG34J1172002-01

☑ [A]: Pass the fuel tank water drain hose behind the PCV hose.	1. Fuel tank water drain hose
☑ [B]: Clamp the fuel tank water drain hose at the white mark and push the clamp until it touch the clutch cover.	"a": 3 mm (0.12 in) or less
☑ [C]: Pass the fuel tank water drain hose inside of the clutch cover.	

Diagnostic Information and Procedures

Fuel System Symptom Diagnosis

BENH23K21704001

Refer to "Engine Symptom Diagnosis" in Section 1A (Page 1A-12).

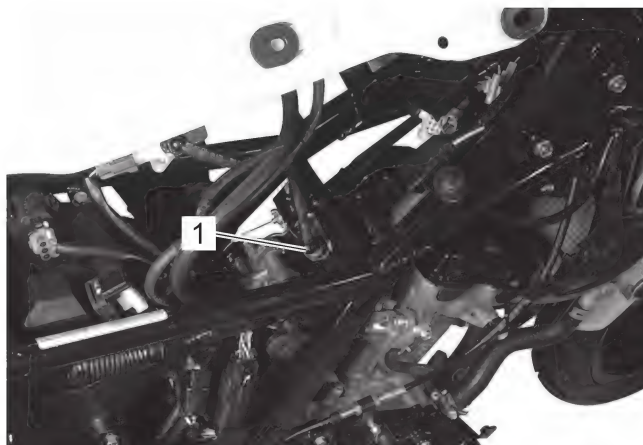
Repair Instructions

Fuel Pressure Inspection

BENH23K21706001

Refer to "Front Fairing Removal and Installation" in Section 9D (Page 9D-22). and "Frame Cover Removal and Installation" in Section 9D (Page 9D-30)

- 1) Disconnect the fuel feed hose (1) from the fuel hose joint. (Page 1G-5)

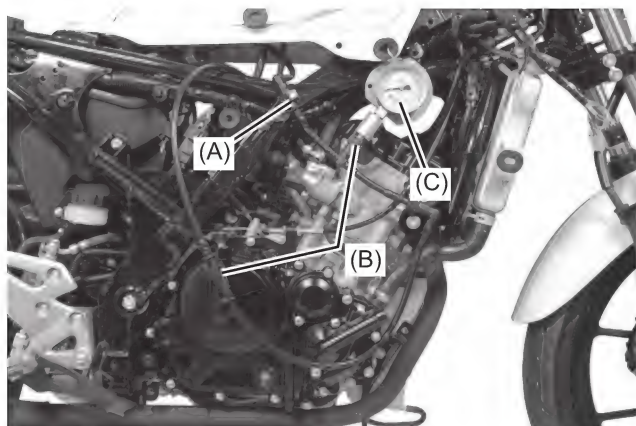


IH23K1170001-04

- 2) Install the special tools between the fuel feed hose and fuel hose joint.

Special tool

- (A): 09940-40211
- (B): 09940-40220
- (C): 09915-74511



IH23K1170002-02

- 3) Turn the ignition switch ON and check for fuel pressure.
If the fuel pressure is lower than the specification, check for the followings:
 - Fuel hose leakage
 - Clogged fuel mesh filter
 - Pressure regulator
 - Fuel pump
If the fuel pressure is higher than the specification, check for the followings:
 - Fuel pump
 - Pressure regulator

Fuel pressure

Approx. 300 kPa (3.1 kgf/cm², 43.5 psi)

- 4) Remove the special tools.

⚠ WARNING

Before removing the special tools, turn the ignition switch OFF and release the fuel pressure slowly.

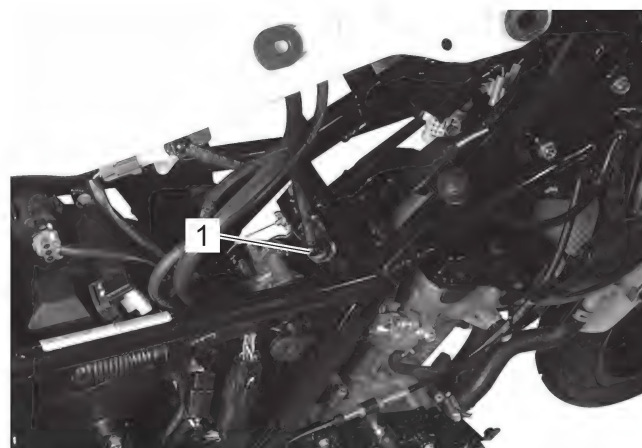
- 5) After finishing the fuel pressure inspection, reinstall the removed parts.

Fuel Discharge Amount Inspection

BENH23K21706002

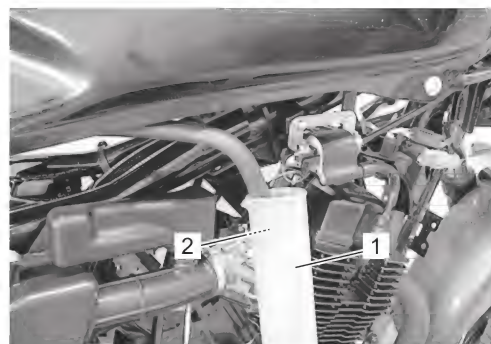
Refer to "Fuel Tank Cover Removal and Installation" in Section 9D (Page 9D-27).

- 1) Lift and support the fuel tank with a wooden block or the like.
- 2) Disconnect the fuel feed hose (1) from the fuel hose joint. (Page 1G-5)



IH23K1170001-04

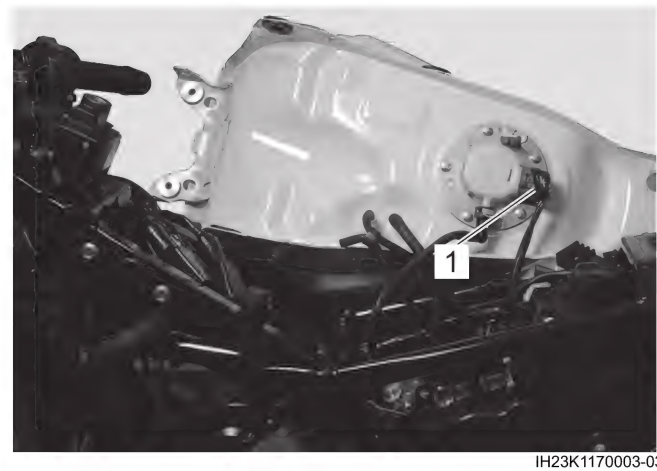
- 3) Place the measuring cylinder (1) and insert the fuel feed hose end (2) into the measuring cylinder.



IG34J1172005-01

1G-5 Fuel System:

4) Disconnect the fuel pump coupler (1).



IH23K1170003-03

5) Connect proper lead wires to the fuel pump.
Apply 12 V to fuel pump (1) (between W wire terminal (2) and P wire terminal (3)) for 10 seconds and measure the amount of fuel discharged.
If the discharge amount is out of the specification, the following cause may be considered.

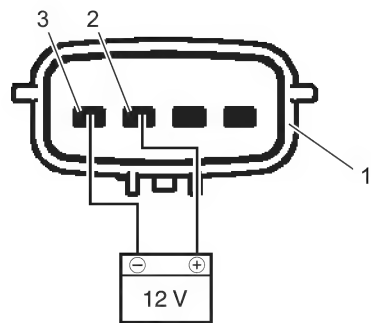
Possible cause	Correction
Clogged fuel mesh filter	Replace
Defective fuel pump	Replace

Battery (+) terminal – Terminal (2)
Battery (–) terminal – Terminal (3)

NOTE

The battery must be in fully charged condition.

FP discharge amount per 10 seconds
27.8 ml (0.94 US oz, 0.98 Imp oz) or more



IG34J1172007-01

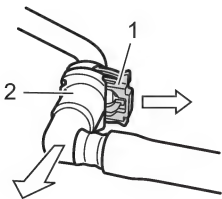
6) After finishing the fuel discharge inspection, reinstall the removed parts.

Fuel Feed Hose Disconnecting and Reconnecting

BENH23K21706003

Disconnecting

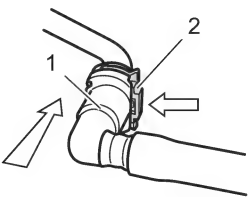
- 1) Place a rag over the fuel feed hose.
- 2) Pull the retainer (1).
- 3) Disconnect the fuel feed hose joint (2) from the fuel pipe.



IE31J1170034-01

Reconnecting

- 1) Insert the fuel feed hose joint (1) to the fuel pipe.
- 2) Lock the retainer (2).



IE31J1170035-01

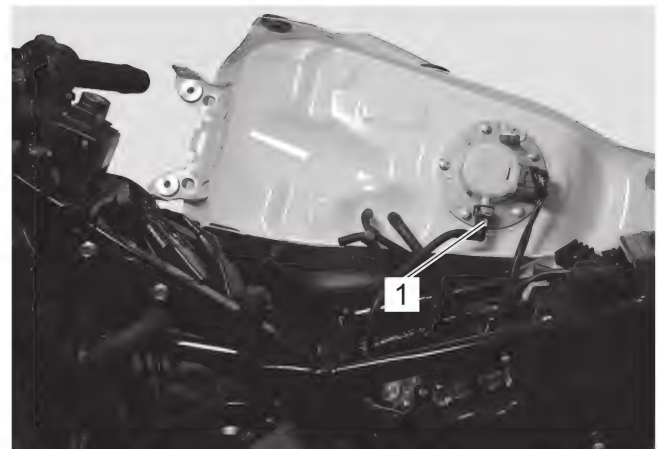
- 3) Confirm that fuel feed hose joint is not disconnected by hand.

Fuel Feed Hose Inspection

BENH23K21706004

Refer to “Fuel Tank Cover Removal and Installation” in Section 9D (Page 9D-27).

Inspect the fuel feed hose (1) for damage and fuel leakage. If any defects are found, the fuel feed hose must be replaced.



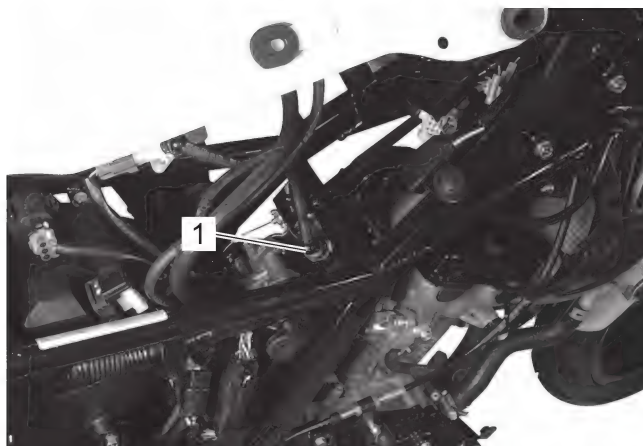
IH23K1170005-01

Fuel Feed Hose Removal and Installation

BENH23K21706005

Removal

- 1) Remove fuel tank covers. ⌚ (Page 9D-27).
- 2) Disconnect the fuel feed hose (1) from the fuel hose joint. ⌚ (Page 1G-5)



IH23K1170001-04

- 3) Lift and support the fuel tank with a wooden block or the like.
- 4) Disconnect the fuel feed hose (1) from the fuel pump assembly.



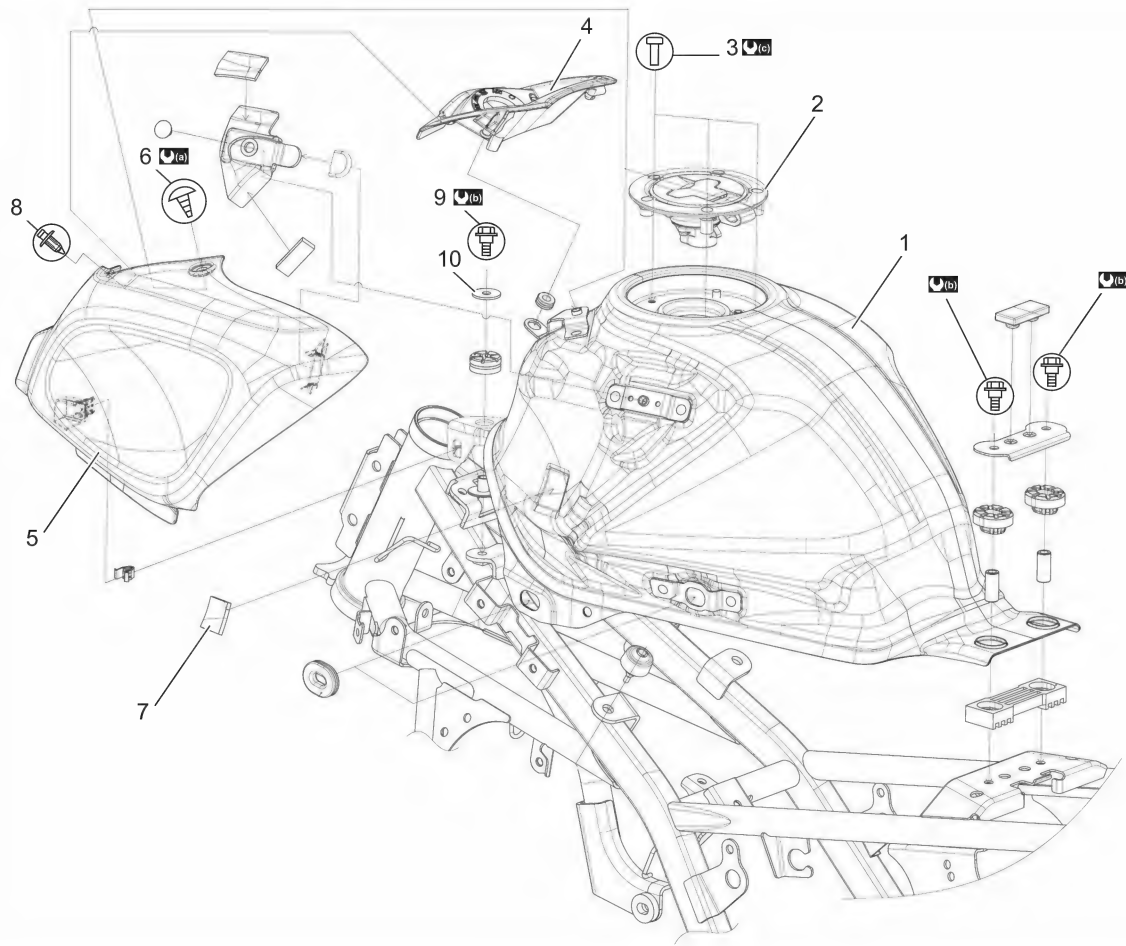
IH23K1170003-03

Installation

Install the fuel feed hose in the reverse order of removal.

Fuel Tank Construction
GSX R 150 Model

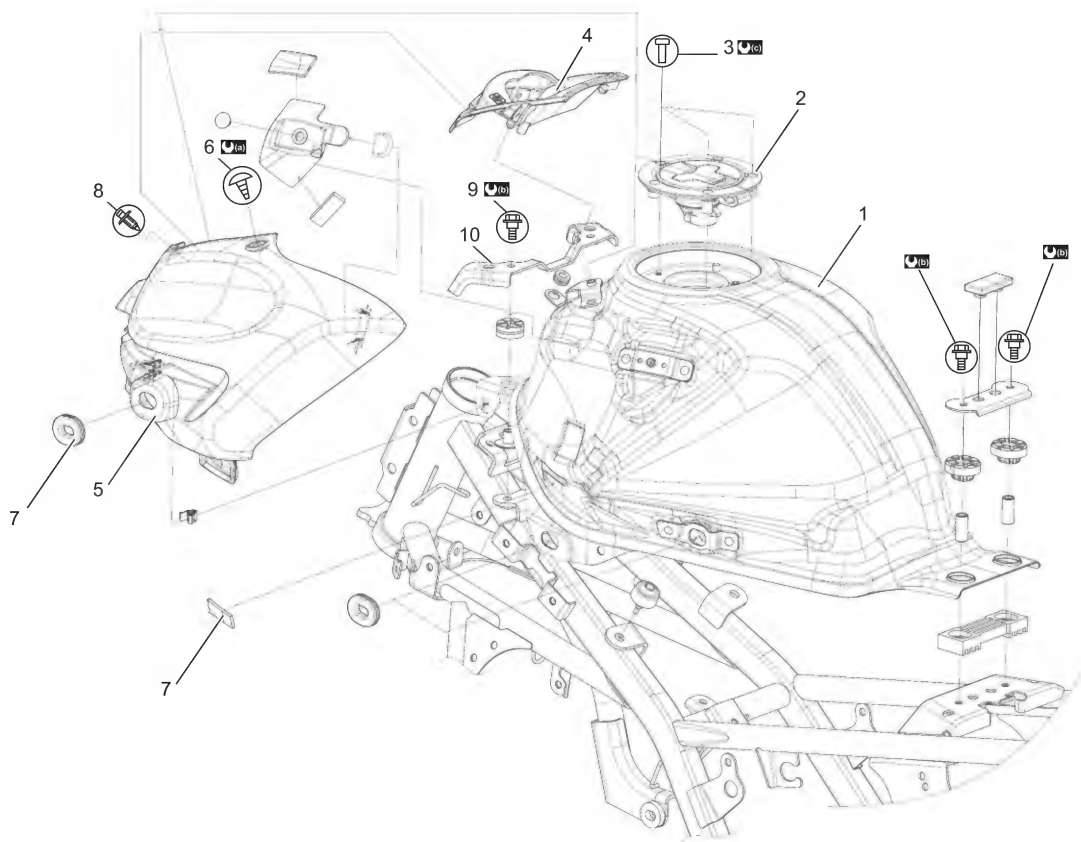
BENH23K21706006






IH23K1170033-01

1. Fuel tank	6. Fuel tank cover screw	⚙️(a) : 4.0 N-m (0.41 kgf-m, 2.95 lbf-ft)
2. Fuel filler cap	7. Cushion	⚙️(b) : 8.0 N-m (0.82 kgf-m, 5.90 lbf-ft)
3. Fuel filler cap bolt	8. Clip	⚙️(c) : 2.0 N-m (0.20 kgf-m, 1.47 lbf-ft)
4. Fuel tank center cover	9. Bolt	
5. Fuel tank cover	9. Washer	

GSX S 150 Model



IH23K2170001-01

1. Fuel tank	6. Fuel tank cover screw	 (a) : 4.0 N·m (0.41 kgf-m, 2.95 lbf-ft)
2. Fuel filler cap	7. Cushion	 (b) : 8.0 N·m (0.82 kgf-m, 5.90 lbf-ft)
3. Fuel filler cap bolt	8. Clip	 (c) : 2.0 N·m (0.20 kgf-m, 1.47 lbf-ft)
4. Fuel tank center cover	9. Bolt	
5. Fuel tank cover	10. Frame front inner cover bracket	

Fuel Tank Removal and Installation

BENH23K21706007

Removal

1) **GSX R 150 Model**

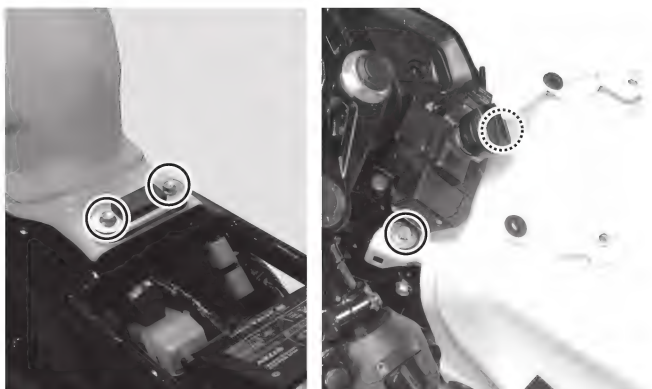
Remove front fairing. (Page 9D-22)

GSX S 150 Model

Remove fuel tank side cover. (Page 9D-23)

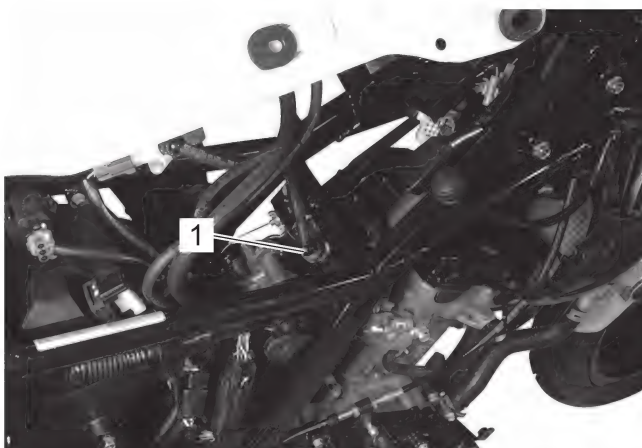
2) Remove frame cover. (Page 9D-30)

3) Remove fuel tank bolt.



IH23K1170009-01

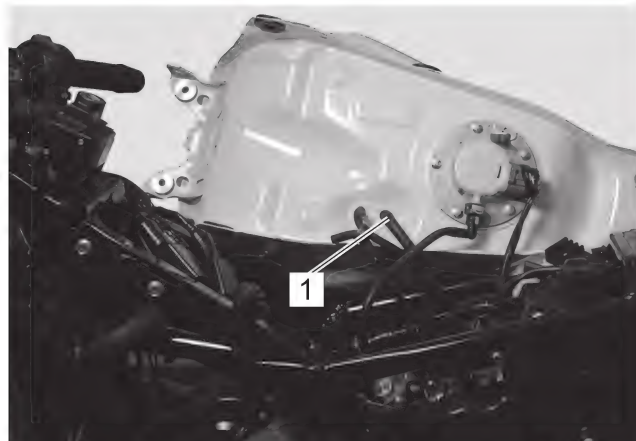
4) Disconnect the fuel feed hose (1) from the fuel hose joint. (Page 1G-5)



IH23K1170001-04

5) Lift and support the fuel tank with a wooden block or the like.

6) Disconnect the fuel tank drain hose (1).



IH23K1170006-01

7) Disconnect the fuel pump coupler (1).



IH23K1170007-01

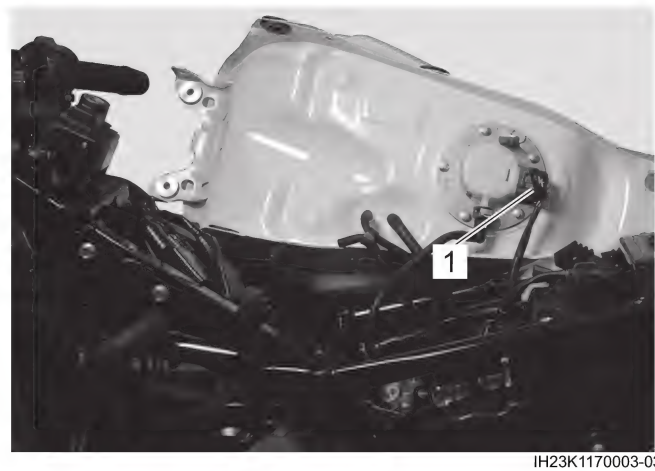
8) If necessary, remove fuel tank cover. (Page 9D-27)

9) Remove fuel tank (1).



IH23K1170008-02

10) Disconnect the fuel feed hose (1).



IH23K1170003-03

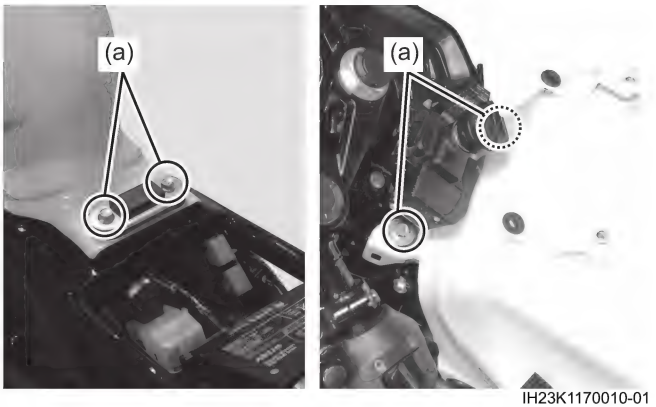
Installation

Install the fuel tank in the reverse order of removal. Pay attention to the following point:

- Tighten the fuel tank brace mounting bolts and fuel tank mounting bolts to the specified torque.

Tightening torque

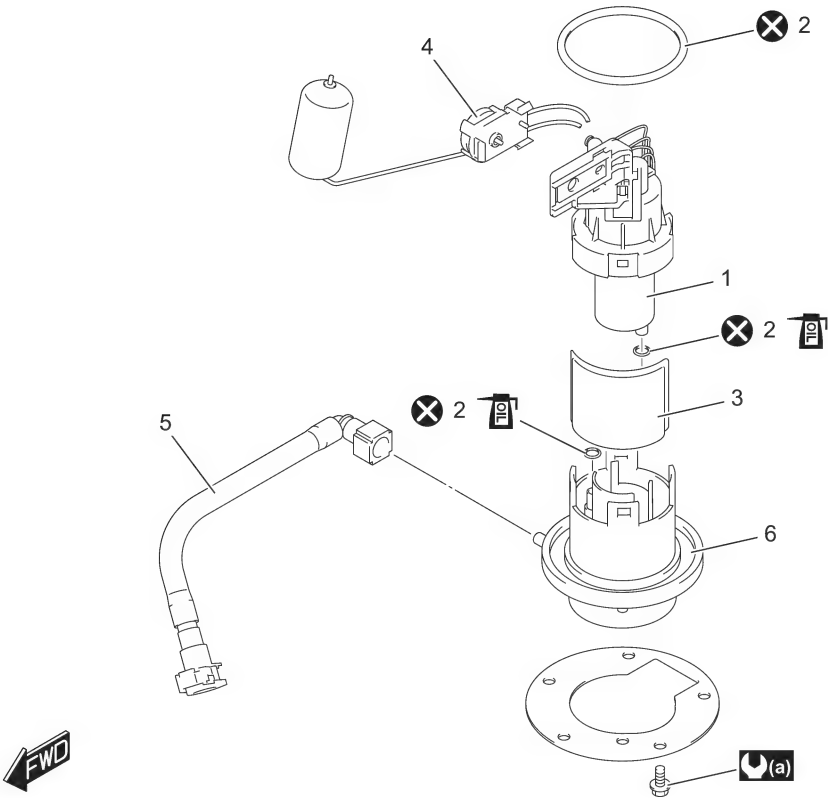
Fuel tank mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)






IH23K1170010-01

Fuel Pump Components

BENH23K21706008



IG34J1172014-01

1. Fuel pump assembly	4. Fuel level gauge	 (a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
2. O-ring	5. Fuel feed hose	 : Apply engine oil.
3. Fuel mesh filter	6. Flange	 : Do not reuse.

Fuel Pump On-Vehicle Inspection

BENH23K21706009

Turn the ignition switch ON and check that the fuel pump operates for a few seconds.

If the fuel pump motor does not make operating sound, inspect the fuel pump circuit connection. (Page 1A-37)

If the fuel pump circuit connection is OK, the fuel pump may be faulty, replace the fuel pump with a new one.

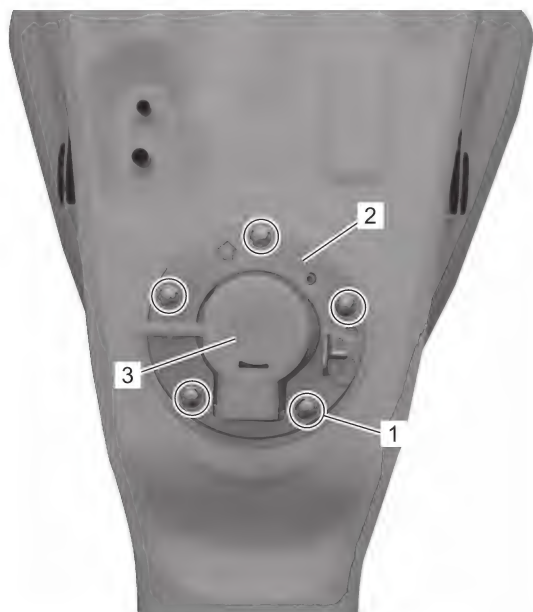
(Page 1G-11)

Fuel Pump Assembly Removal and Installation

BENH23K21706010

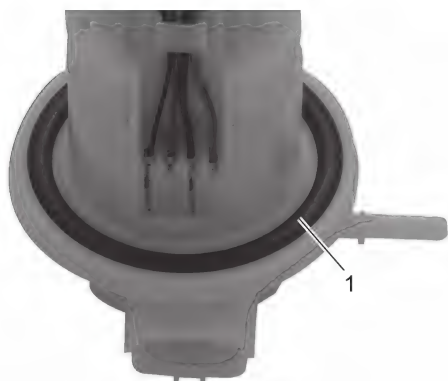
Removal

- 1) Remove the fuel tank. (Page 1G-9)
- 2) Remove the fuel pump mounting bolts (1) diagonally, and remove the plate (2) and fuel pump assembly (3).



IH23K1170011-02

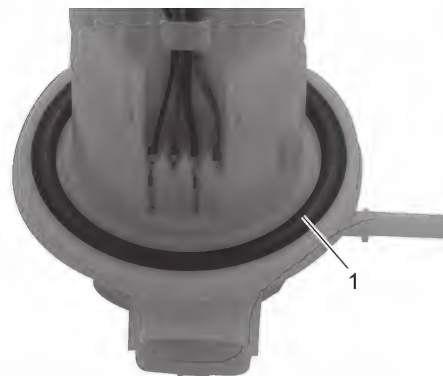
- 3) Remove the O-ring (1).



IH23K1170012-02

Installation

- 1) Install the new O-ring (1) to the fuel pump assembly.



IH23K1170012-02

- 2) Set the fuel pump assembly (1) so that the arrow mark (2) on the plate forward.

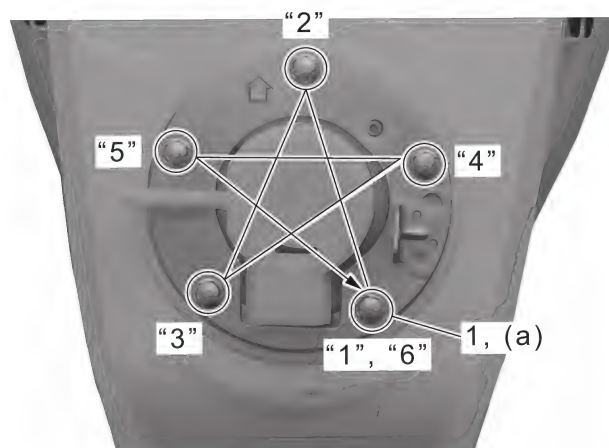


IH23K1170013-01

- 3) When tightening the fuel pump mounting bolts (1), first tighten all bolts lightly in the ascending order and then tighten them to the specified torque in the figure.

Tightening torque

Fuel pump mounting nut (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IH23K1170014-01

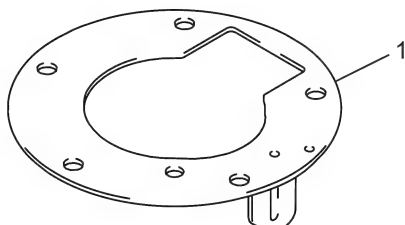
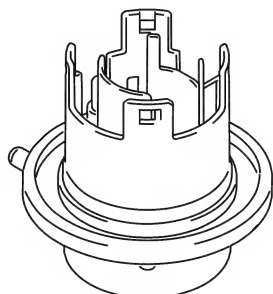
Fuel Pump Disassembly and Reassembly

BENH23K21706011

Refer to "Fuel Pump Assembly Removal and Installation" (Page 1G-11).

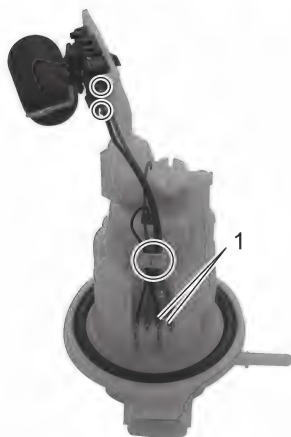
Disassembly

- 1) Remove fuel pump plate (1).



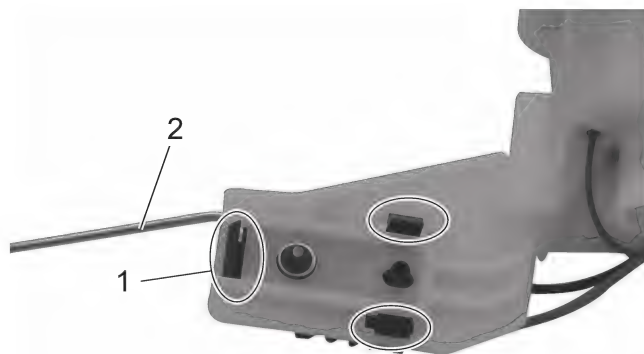
IH23K1170015-01

- 2) Disconnect the fuel level gauge lead wires (1).



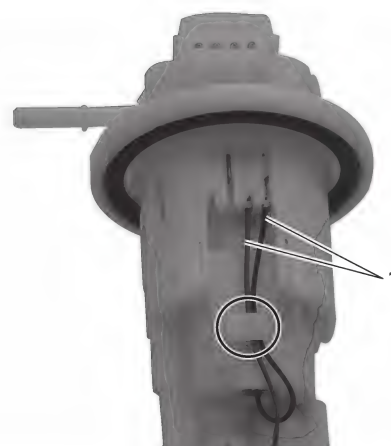
IH23K1170016-01

- 3) Unhook the hooks (1) and remove the fuel level gauge (2).



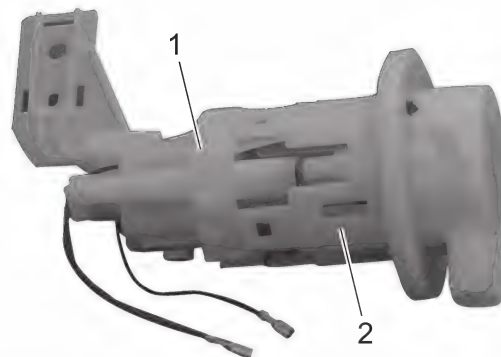
IH23K1170017-01

- 4) Disconnect the fuel pump lead wires (1).



IH23K1170018-01

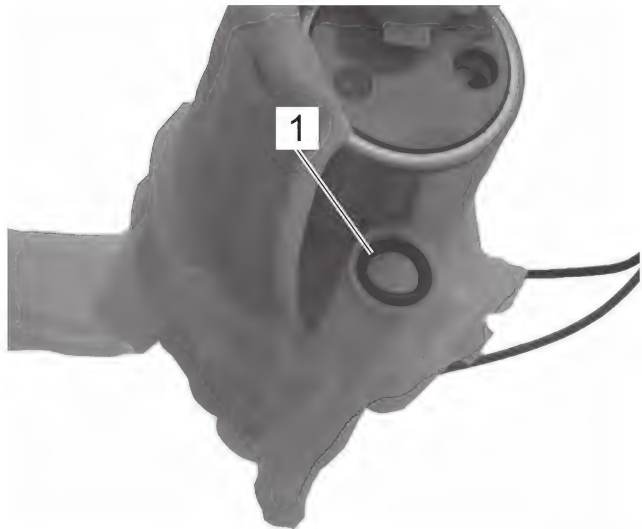
- 5) Remove the fuel pump assembly (1) from the flange (2).



IH23K1170019-01

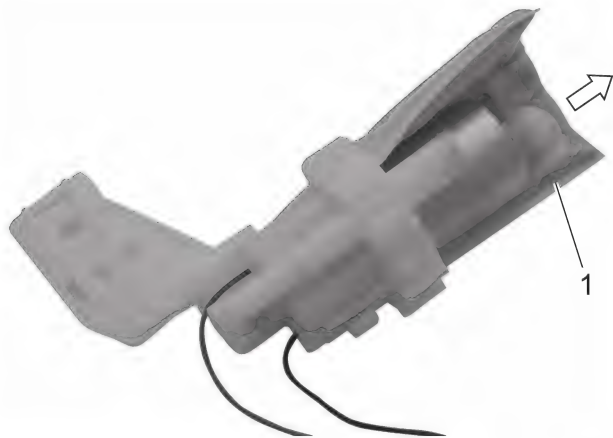
1G-13 Fuel System:

6) Remove the O-ring (1).



IH23K1170020-01

7) Remove the fuel mesh filter (1).



IH23K1170021-01

8) Remove the O-ring (1).

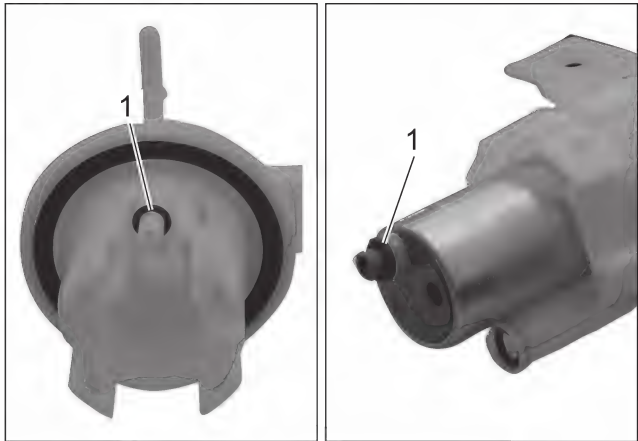


IH23K1170022-01

Reassembly

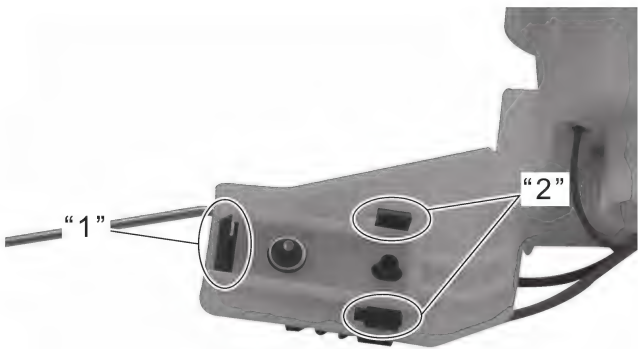
Reassemble the fuel pump in the reverse order of the disassembly. Pay attention to the following points:

- Apply engine oil lightly to the new O-rings (1) and install them.



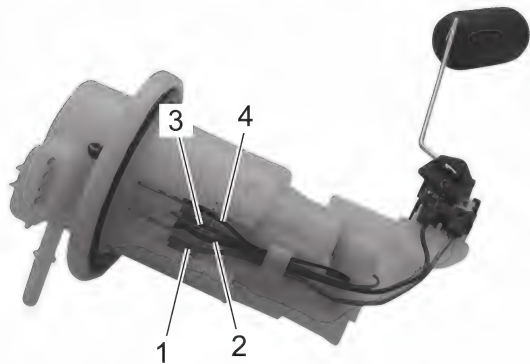
IH23K1170023-01

- Lock the fuel level gauge hooks in order of "1" → "2".



IH23K1170024-01

- Connect all lead wires securely so as not to cause contact failure.
- Route all lead wires securely.



IH23K1170025-01

1.	Fuel level gauge (+) lead wire (R)
2.	Fuel level gauge (-) lead wire (B)
3.	Fuel pump (+) lead wire (R)
4.	Fuel pump (-) lead wire (B)

Fuel Mesh Filter Inspection

BENH23K21706012

Refer to "Fuel Pump Disassembly and Reassembly" (Page 1G-12).

Inspect the fuel mesh filter for dirt. If the fuel mesh filter is dirtied excessively, replace the fuel mesh filter with a new one.



IG34J1172029-01

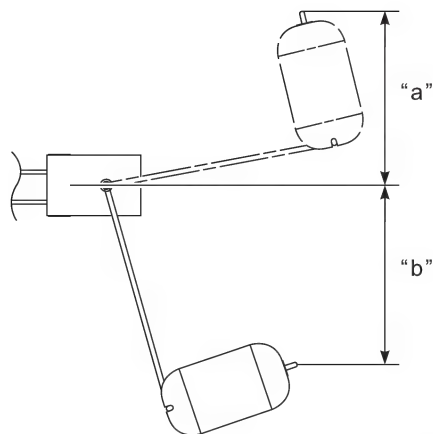
Fuel Level Gauge Inspection

BENH23K21706013

Refer to "Fuel Pump Assembly Removal and Installation" (Page 1G-11).

Measure the resistance at each float position of the fuel level gauge. If the resistance is incorrect, replace the fuel level gauge with a new one.

	Float position	Resistance
"a"	65.1 – 73.1 mm (2.57 – 2.87 in)	10 – 73 Ω
"b"	66.9 – 74.9 mm (2.64 – 2.94 in)	117 – 216 Ω

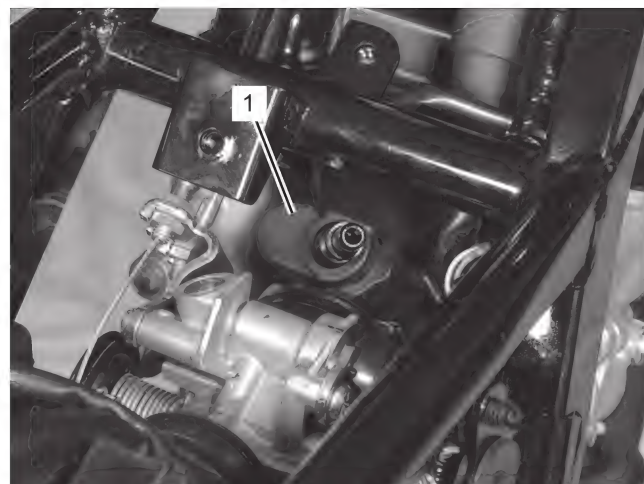


IG34J1172030-01

Fuel Injector On-Vehicle Inspection

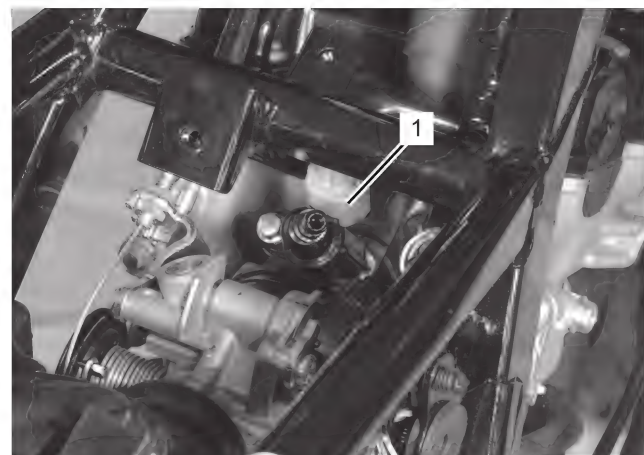
BENH23K21706014

- 1) Remove left front fairing. (Page 9D-22)
- 2) Remove left frame cover. (Page 9D-30)
- 3) Remove fuel tank. "Fuel Tank Removal and Installation" (Page 1G-9)
- 4) Turn the ignition switch OFF.
- 5) Remove fuel injector cover (1).



IH23K1170026-01

- 6) Disconnect the fuel injector coupler (1).

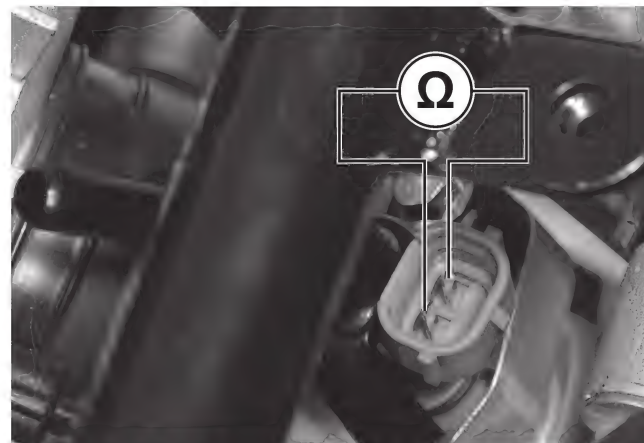


IH23K1170027-02

- 7) Measure the fuel injector resistance between terminals using the multi circuit tester. If resistance is out of specification, replace the fuel injector with a new one. (Page 1G-15)

Fuel injector resistance

12.0 – 12.5 Ω at 20 °C (68 °F)



IH23K1170028-01

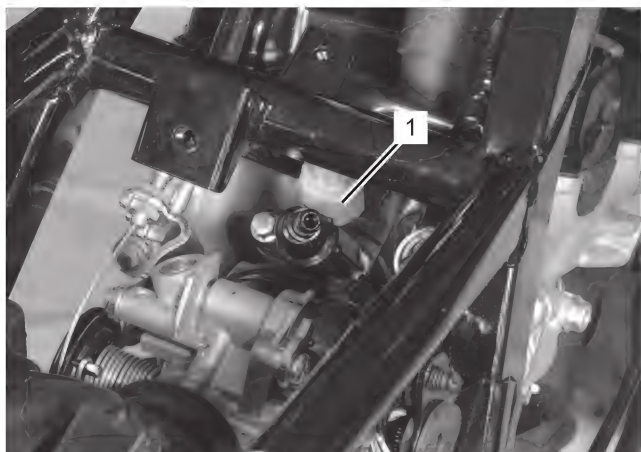
- 8) After finishing the fuel injector inspection, install the removed parts.

Fuel Injector Removal and Installation

BENH23K21706015

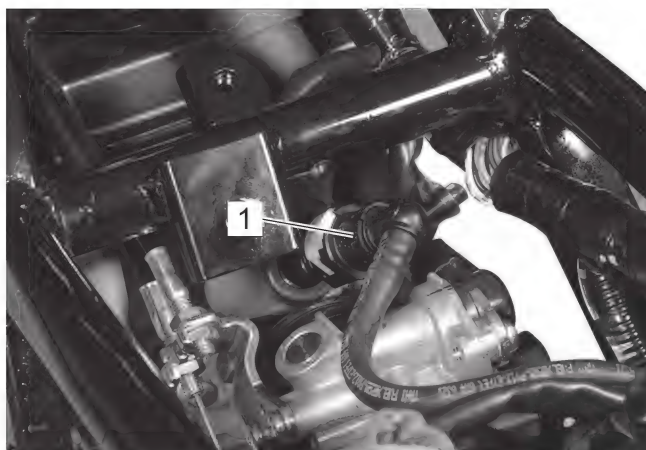
Removal

- 1) Remove left front fairing. (Page 9D-22)
- 2) Remove left frame cover. (Page 9D-30)
- 3) Remove fuel tank. "Fuel Tank Removal and Installation" (Page 1G-9)
- 4) Disconnect the fuel injector coupler (1).



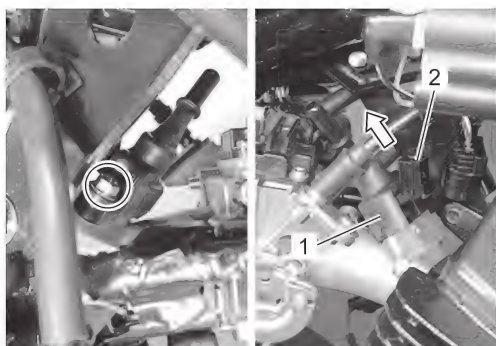
IH23K1170027-02

- 5) Disconnect the fuel feed hose (1) from the fuel hose joint. (Page 1G-5)



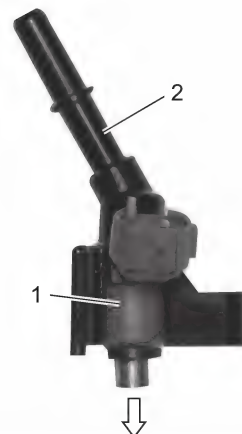
IH23K1170029-01

- 6) Remove the fuel hose joint (1) and fuel injector (2) pulling them straight from the intake pipe.



IG34J1172034-01

- 7) Remove the fuel injector (1) pulling it straight from the fuel hose joint (2).



IH23K1170030-01

- 8) Remove the seal ring (1) and O-ring (2).

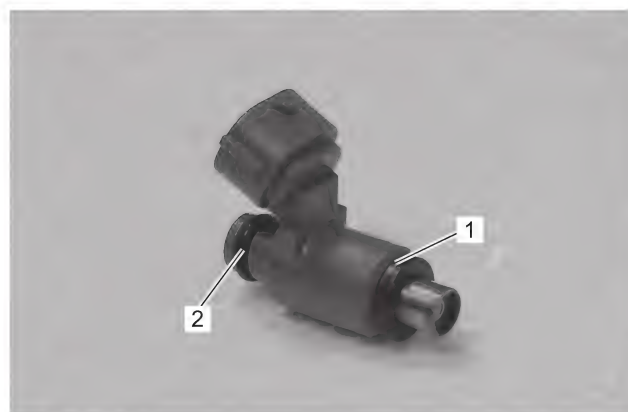


IH23K1170031-02

Installation

Install the fuel injector in the reverse order of removal. Pay attention to the following points:

- Install the new seal ring (1) and new O-ring (2) to the fuel injector and apply thin coat of the engine oil to the seal ring and O-ring.

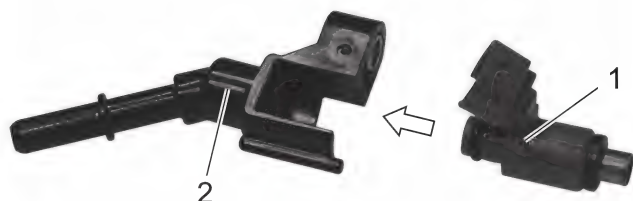


IH23K1170031-02

- Connect the fuel injector (1) pushing it straight to the fuel hose joint (2).

NOTICE

Never turn the fuel injector while pushing it.



IH23K1170032-01

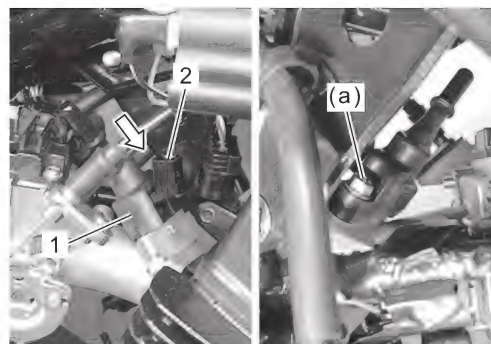
- Install the fuel hose joint (1) and fuel injector (2) pushing them straight to the intake pipe, and tighten the fuel hose joint mounting bolt to the specified torque.

NOTICE

Never turn the fuel hose joint and fuel injector while installing them.

Tightening torque

Fuel hose joint mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IG34J1172038-01

Fuel Injector Inspection and Cleaning

BENH23K21706016

Refer to "Fuel Injector Removal and Installation" (Page 1G-15).

Check the fuel injector filter for evidence of dirt and contamination. If present, clean and check for presence of dirt in the fuel line and fuel tank.



IG34J1172039-01

Specifications

Tightening Torque Specifications

BENH23K21707001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Fuel tank mounting bolt	10	1.0	7.5	☞ (Page 1G-10)
Fuel pump mounting nut	10	1.0	7.5	☞ (Page 1G-11)
Fuel hose joint mounting bolt	10	1.0	7.5	☞ (Page 1G-16)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

"Fuel Tank Construction" (Page 1G-7)

"Fuel Pump Components" (Page 1G-10)

"Fasteners Information" in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

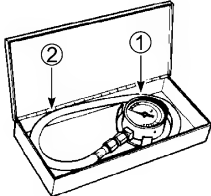
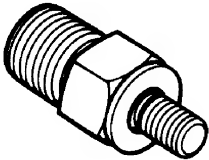
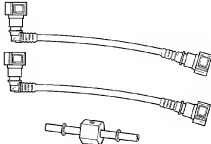
BENH23K21708001

NOTE

Required service material(s) is also described in:
“Fuel Pump Components” (Page 1G-10)

Special Tool

BENH23K21708002

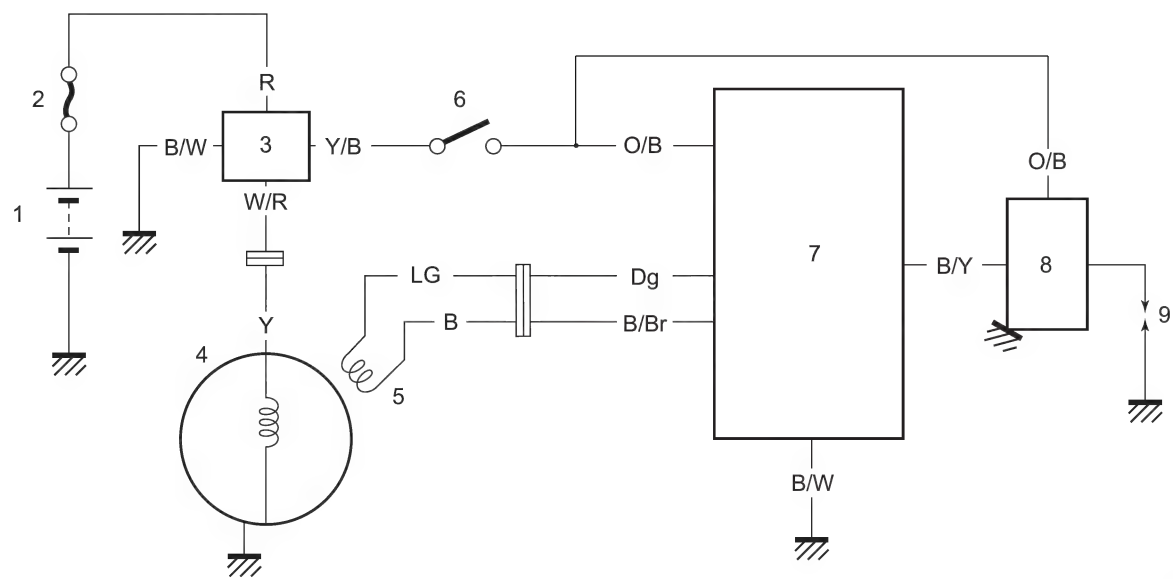
<p>09915-74511</p> <p>Oil pressure gauge set (600 kPa)</p> <p>1. Gauge 2. Hose</p> <p>🔧 (Page 1G-4)</p>		<p>09940-40211</p> <p>Fuel pressure gauge adapter</p> <p>Discontinued</p> <p>🔧 (Page 1G-4)</p>	
<p>09940-40220</p> <p>Fuel pressure gauge attachment</p> <p>🔧 (Page 1G-4)</p>			

Ignition System

Schematic and Routing Diagram

Ignition System Diagram

BENH23K21802001



IG12K1180001-02

1. Battery	4. Generator	7. ECM
2. Main fuse (20 A)	5. CKP sensor	8. Ignition coil
3. Regulator/rectifier	6. Ignition switch	9. Spark plug

Ignition System Components Location

BENH23K21802002

Refer to "Electrical Components Location" in Section 0A (Page 0A-5).

Diagnostic Information and Procedures

Ignition System Symptom Diagnosis

BENH23K21804001

Condition	Possible cause	Correction / Reference Item
Spark plug not sparking	Damaged spark plug.	Replace. (Page 1H-5)
	Fouled spark plug.	Replace. (Page 1H-5)
	Wet spark plug.	Dry or replace. (Page 1H-6)
	Defective ignition coil or spark plug cap.	Replace. (Page 1H-6)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ECM.	Replace. (Page 1C-2)
	Open-circuited wiring connections.	Repair or replace. (Page 9A-2)
	Open or short in high-tension cord.	Replace. (Page 1H-6)
Engine stalls easily (No spark)	Fouled spark plug.	Replace. (Page 1H-5)
	Defective CKP sensor.	Replace. • Removal: (Page 1J-5) • Installation: (Page 1J-7)
	Defective ECM.	Replace. (Page 1C-2)
Spark plug is wet or quickly becomes fouled with carbon	Excessively rich air/fuel mixture.	Inspect FI system.
	Excessively idling speed.	Inspect FI system.
	Incorrect gasoline.	Change.
	Dirty air cleaner element.	Replace. (Page 1D-9)
	Incorrect spark plug (Cold type).	Change to standard spark plug. (Page 1H-5)
Spark plug quickly becomes fouled with oil or carbon	Worn piston rings.	Replace. (Page 1D-38)
	Worn piston.	Replace. (Page 1D-38)
	Worn cylinder.	Replace. (Page 1D-28)
	Excessive valve-stem to valve-guide clearance.	Replace. (Page 1D-33)
	Worn valve stem oil seals.	Replace. (Page 1D-33)
Spark plug electrodes overheat or burn	Incorrect spark plug (Hot type).	Change to standard spark plug. (Page 1H-5)
	Overheated engine.	Tune-up.
	Loose spark plug.	Tighten. (Page 1H-5)
	Excessively lean air/fuel mixture.	Inspect FI system.

No Spark or Poor Spark

BENH23K21804002

Troubleshooting

NOTE

Check for the following points before diagnosing.

- The transmission is in neutral.
- The fuse is not blown.
- The battery is fully-charged.

Step 1

- 1) Check the ignition system couplers for poor connections.

Is there connection in the ignition system couplers?

Yes Go to Step 2.

No Repair or replace defective part.

Step 2

- 1) Turn the ignition switch ON.
- 2) Measure the battery voltage between O/B wire (+) and B/W wire (–) of ECM. ⚙️ (Page 1H-1)

Is the voltage OK?

- Yes Go to Step 3.
- No • Faulty ignition switch.
- Broken wire harness or poor connection of related circuit couplers.

Step 3

Measure the ignition coil primary peak voltage. ⚙️ (Page 1H-7)

Is the peak voltage OK?

- Yes Go to Step 4.
- No Go to Step 5.

Step 4

Inspect the spark plug. ⚙️ (Page 1H-6)

Is the spark plug OK?

- Yes Go to Step 5.
- No Faulty spark plug.

Step 5

Inspect the ignition coil. ⚙️ (Page 1H-7)

Is the ignition coil OK?

- Yes Go to Step 6.
- No Faulty ignition coil.

Step 6

Measure the CKP sensor peak voltage and its resistance. ⚙️ (Page 1C-8)

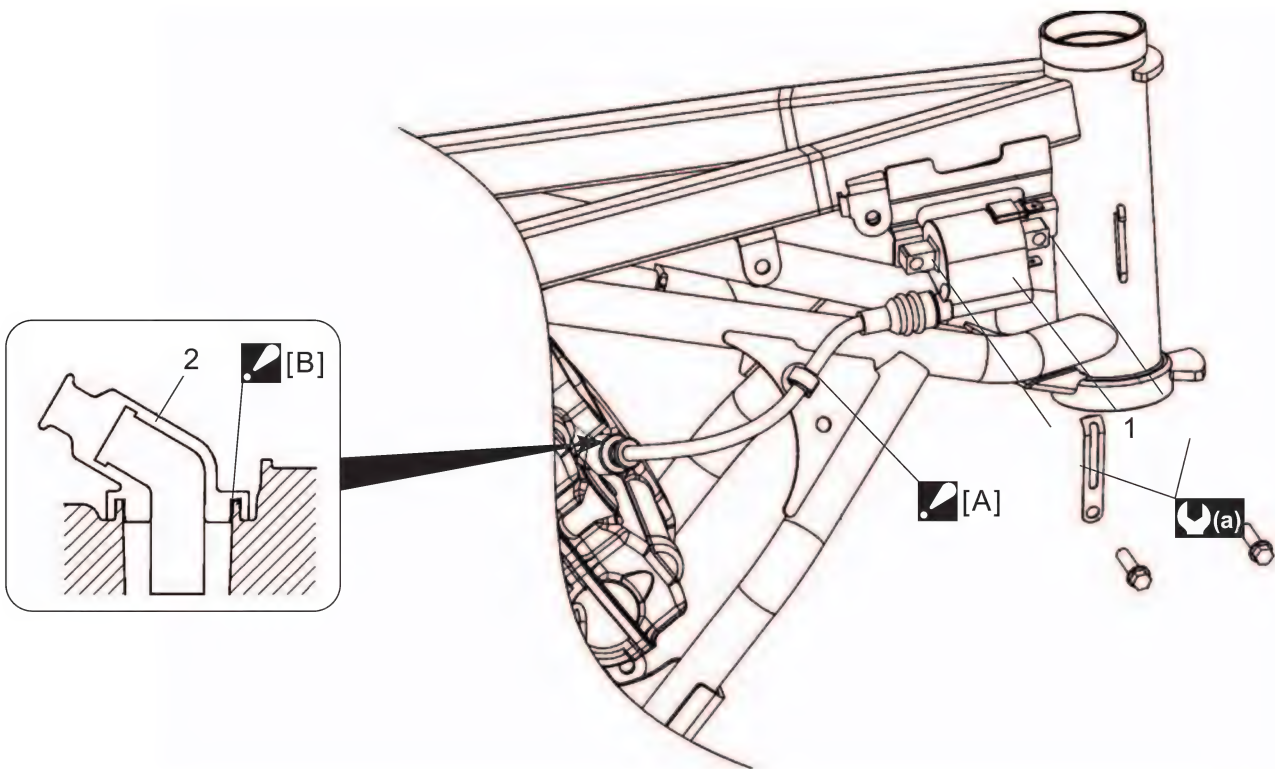
Are the peak voltage and resistance OK?

- Yes • Faulty ECM.
- Open or short circuit in wire harness.
- Poor connection of ignition couplers.
- No • Faulty CKP sensor.
- Metal particles or foreign material being stuck on the CKP sensor and rotor tip.

Repair Instructions

Ignition Coil Construction

BENH23K21806001

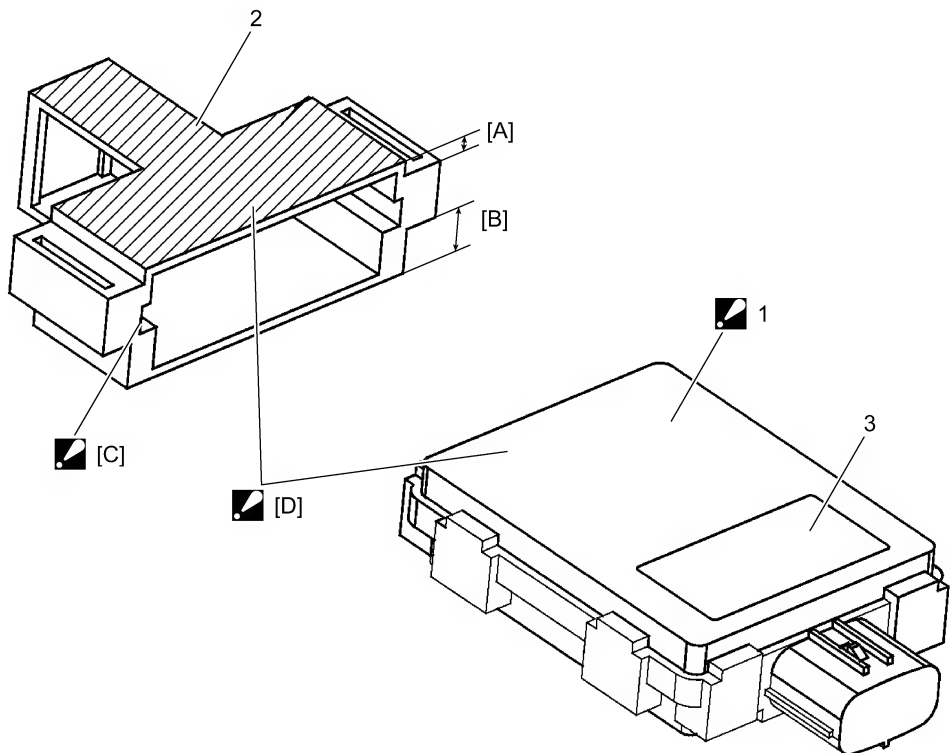


IH23K1180008-01




[A]: Insert the clamp to the bottom of bracket.	1. Ignition coil	(a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
[B]: Cover the plug hole with high tension code seal.	2. High tension code seal	

Keyless Control Unit Construction

BENH23K21806002



IH23K1180012-03

[A]: Narrow side	<div>  [D]: Match the upper side of keyless controller holder and upper side of keyless control unit. </div>	3. Label
[B]: Wide side	<div>  1. Keyless control unit : The label side is upper side. </div>	
<div>  [C]: Match the groove of keyless controller holder and groove of keyless control unit. </div>	2. Keyless controller holder	

Spark Plug Removal and Installation

BENH23K21806003

Removal

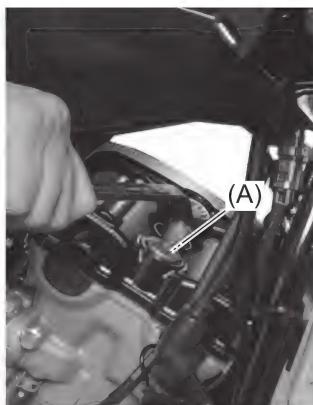
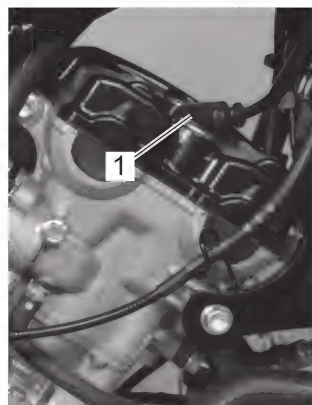
WARNING

**The hot engine can burn you.
Wait until the engine is cool enough to touch.**

- 1) Remove the right front fairing. (Page 9D-22)
- 2) Disconnect the spark plug cap (1).
- 3) Remove the spark plug using the special tool.

Special tool

(A): 09930-10121



IH23K1180009-02

Installation

Install the spark plug in the reverse order of removal.
Pay attention to the following point:

- Screw the spark plug into the cylinder head with fingers, and then tighten it to the specified torque.

NOTICE

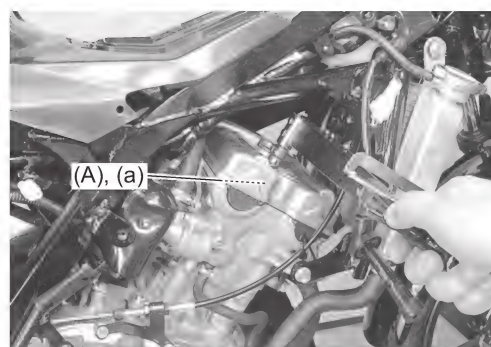
Do not cross thread or over tighten the spark plug, or such an operation will damage the aluminum threads of the cylinder head.

Special tool

(A): 09930-10121

Tightening torque

Spark plug (a): 11 N·m (1.1 kgf-m, 8.5 lbf-ft)



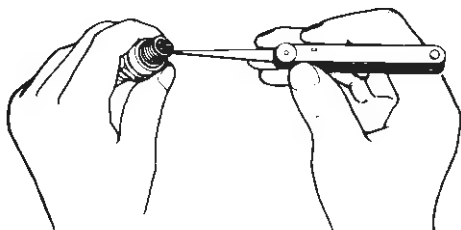
IG12K1180004-01

Spark Plug Inspection and Cleaning

BENH23K21806004

Carbon Deposits

Check carbon deposits on the spark plug.
If carbon is deposited, remove it using a spark plug cleaner machine or carefully use a tool with a pointed end.



I649G1020010-02

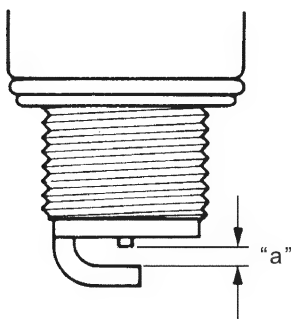
Spark Plug Gap

Measure the spark plug gap "a" using a thickness gauge.
Adjust the spark plug gap if necessary.

Spark plug

Type [Standard]: NGK MR8E-9 or U24EPR-N9

Gap [Standard]: 0.8 – 0.9 mm (0.031 – 0.035 in)



ID26J1180010-02

Electrodes Condition

Check the worn or burnt condition of the electrodes.
If it is extremely worn or burnt, replace the spark plug.
Also replace the spark plug if it has a broken insulator, or damaged thread.

NOTICE

Confirm the thread size and reach when replacing the spark plug. If the reach is too short, carbon will be deposited on the screw portion of the spark plug hole and engine damage may result.

Ignition Coil Removal and Installation

BENH23K21806005

Refer to "Ignition Coil Construction" (Page 1H-4).

Removal

- 1) Remove the right under cowling. (Page 9D-25)
- 2) Disconnect the spark plug cap. (Page 1H-5)
- 3) Disconnect the ignition coil primary lead wire couplers (1).
- 4) Remove the ignition coil (2).



IH23K1180001-01

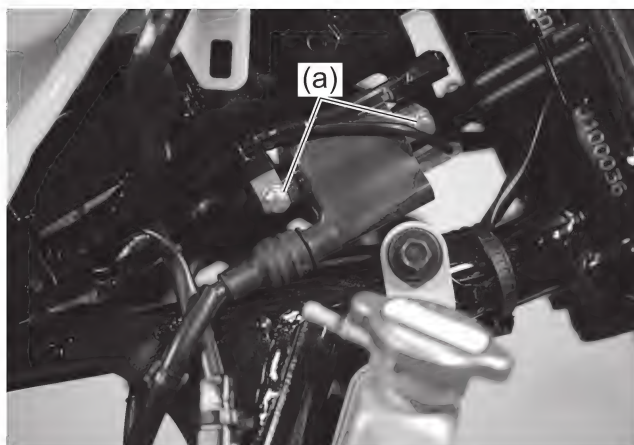
Installation

Install the ignition coil in the reverse order of removal.
Pay attention to the following point:

- Tighten the ignition coil mounting bolts to the specified torque.

Tightening torque

Ignition coil mounting bolt (a): 11 N·m (1.1 kgf-m, 8.1 lbf-ft)



IH23K1180002-01

Ignition Coil Inspection

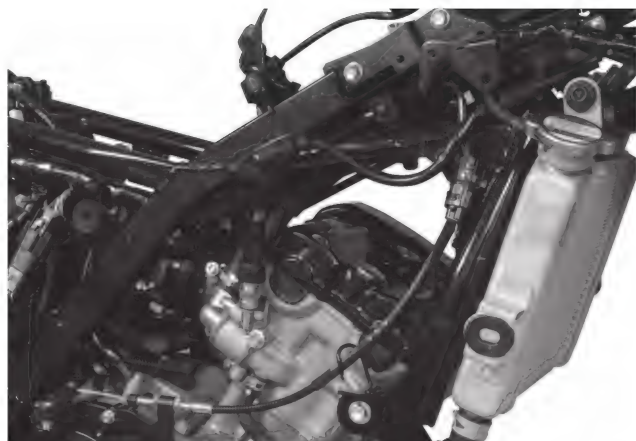
BENH23K21806006

Ignition Coil Primary Peak Voltage

- 1) Disconnect the spark plug cap. (Page 1H-5)
- 2) Connect a new spark plug to the spark plug cap and ground it to the cylinder head.

NOTE

Be sure that the spark plug is connected properly and the battery used is in fully-charged condition.



IH23K1180003-02

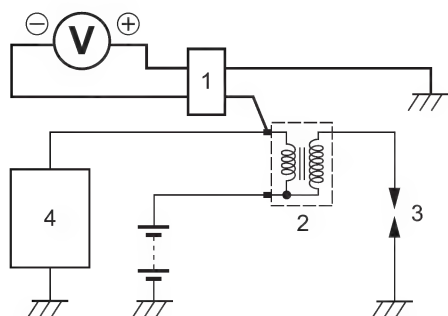
- 3) Connect the multi circuit tester with the peak voltage adaptor (1) as follows:

NOTE

Do not disconnect the ignition coil primary lead wire.

Ignition coil – circuit tester connection

	(+) Probe	(-) Probe
Ignition coil (2)	B/Y wire terminal	O/B wire terminal



IF34J1180008-02

3. New spark plug	4. ECM
-------------------	--------

- 4) Measure the ignition coil primary peak voltage in the following procedures:

⚠ WARNING

Do not touch the tester probes and spark plug to prevent an electric shock while testing.

- a) Shift the transmission to the neutral and turn the ignition switch ON.
 - b) Grasp the clutch lever.
 - c) Press the starter switch and allow the engine to crank for a few seconds, and then measure the ignition coil primary peak voltage.
- 5) Repeat the c) procedure several times and measure the highest peak voltage.
If the voltage is lower than standard range, replace the ignition coil. (Page 1H-6)

Ignition coil primary peak voltage
[Standard]: 200 V or more

- 6) After measuring the ignition coil primary peak voltage, install the removed parts.

Ignition Coil Resistance

- 1) Disconnect the spark plug cap. (Page 1H-5)
- 2) Disconnect the ignition coil lead wire couplers (1).



IH23K1180004-01

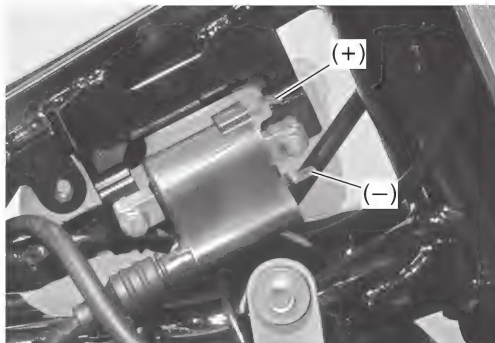
1H-8 Ignition System:

- 3) Measure the ignition coil for resistance in both primary and secondary coils. If the resistance is not within the standard range, replace the ignition coil with a new one.

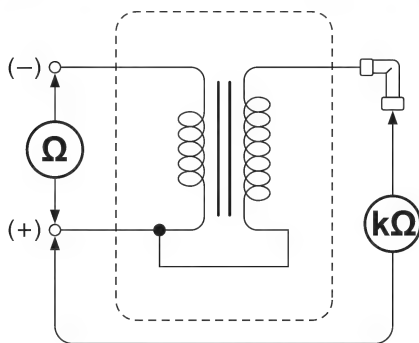
Ignition coil resistance at 25 °C (77 °F)

Primary [Standard]: 1.84 – 2.76 Ω ((+) terminal – (–) terminal)

Secondary [Standard]: 10.01 – 18.59 k Ω ((+) terminal – Plug cap)



IG12K1180009-01



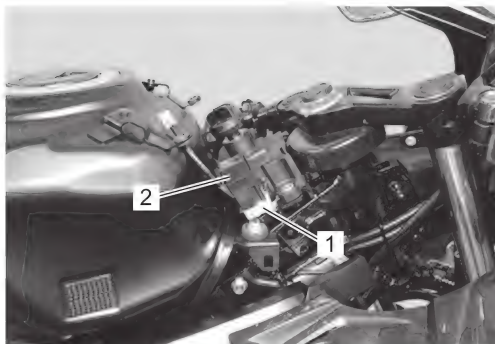
IG12K1180010-01

- 4) After measuring the ignition coil resistance, install the removed parts.

Ignition Relay Inspection (Keyless Start Model)

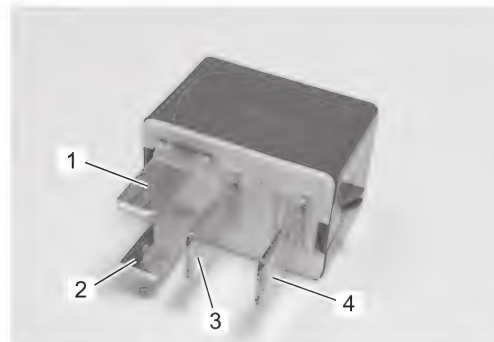
BENH23K21806007

- 1) Remove the front fairing. (Page 9D-22)
- 2) Remove the fuel tank covers. (Page 9D-27)
- 3) Disconnect the coupler (1) and remove the ignition relay (2).



IH23K1180013-01

- 4) First check the insulation between (3) and (4) terminals with a circuit tester. Then apply 12 V to (1) and (2) terminals, (+) to (1) and (–) to (2), and check the continuity between (3) and (4). If there is no continuity, replace it with a new one.



IE31J1160038-01

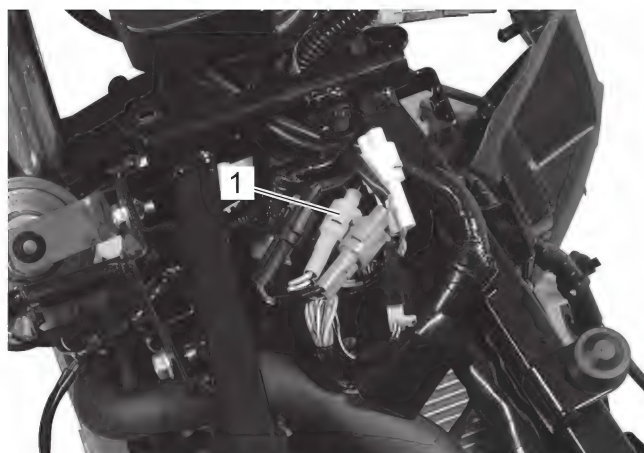
- 5) Install the removed parts.

Ignition Switch Inspection

BENH23K21806008

Ignition Switch Model

- 1) Disconnect the battery (–) lead wire. Refer to “Battery Removal and Installation” in Section 1J (Page 1J-11).
- 2) Remove fuel tank. (Page 1G-9)
- 3) Disconnect the ignition switch coupler (1).



IH23K1180005-01

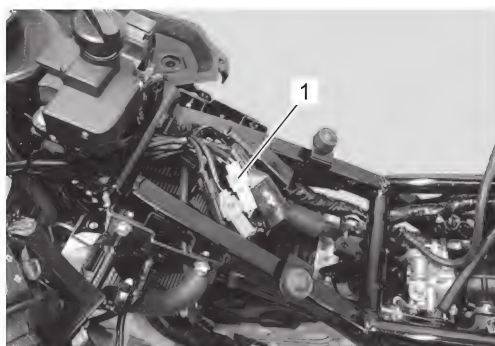
- 4) Inspect the ignition switch for continuity with a circuit tester. If any defect is found, replace the ignition switch with a new one.

Color Position	R	O
ON	○ ————— ○	
OFF		
LOCK		

IH34J1180015-01

Keyless Start Model

- 1) Remove the front fairing. (Page 9D-22)
- 2) Remove the fuel tank cover. (Page 9D-27)
- 3) Remove the fuel tank. (Page 1G-9)
- 4) Disconnect the ignition switch coupler (1).



IH23K1180014-01

- 5) Inspect the ignition switch for continuity with a circuit tester. If any abnormality is found, replace the ignition switch with a new one.

Color Position	R	B/W
ON	○ ————— ○	
"•" (ACC)		
OFF		
LOCK		

IH23K1180015-02

- 6) Inspect the ignition switch for operation. If any abnormality is found, replace the ignition switch with a new one.

Color Position	Ignition Key remove and install	Steering Lock	Fit Solenoid	Request Switch
ON	—	—	—	—
"•" (ACC)	○	—	—	—
OFF	—	—	○	○
LOCK	—	○	○	○

IH23K1180016-02

- 7) After finishing the ignition switch inspection, reinstall the removed parts.

Ignition Switch Removal and Installation

BENH23K21806009

Ignition Switch Model

Removal

- 1) Disconnect the battery (–) lead wire. Refer to "Battery Removal and Installation" in Section 1J (Page 1J-11).

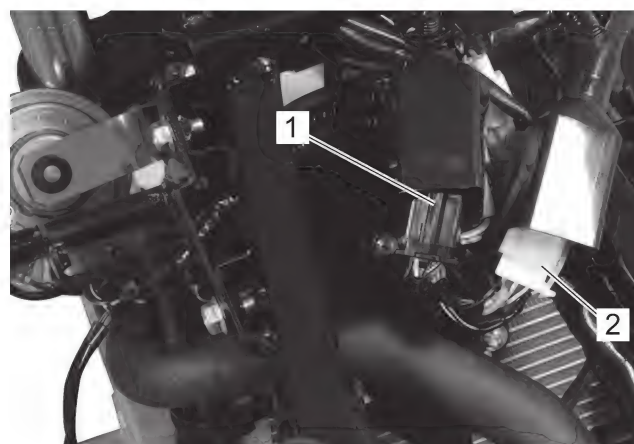
- 2) Remove fuel tank. (Page 1G-9)

3) GSX R 150 Model

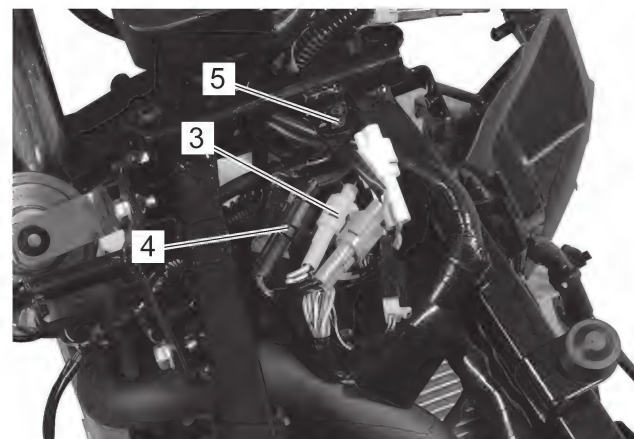
Disconnect the right handle switch coupler (1), left handle switch coupler (2), ignition switch coupler (3), clutch lever switch coupler (4), and harness clamp (5).

GSX S 150 Model

Disconnect the ignition switch coupler (3) and harness clamp (5).



IH23K1180007-01

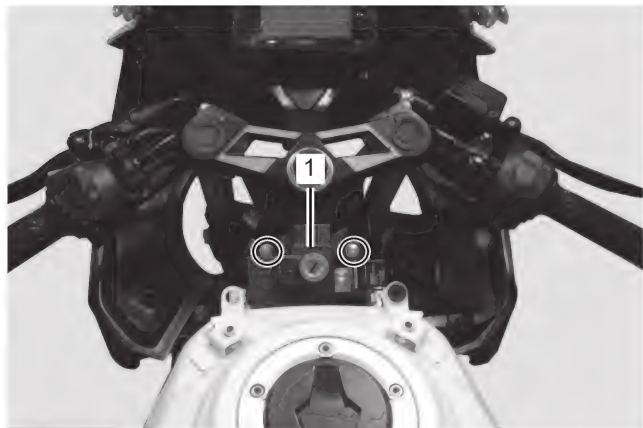


IH23K1180006-01

1H-10 Ignition System:

4) Remove ignition switch (1).

GSX R 150 Model



IH23K1180011-02

GSX S 150 Model



IH23K2180001-01

Installation

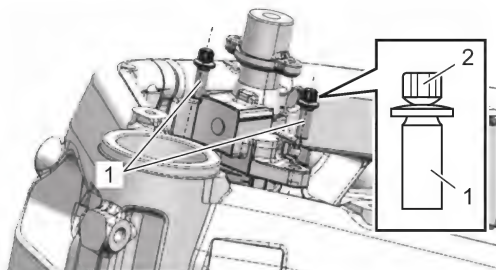
Install the ignition switch in the reverse order of removal. Pay attention to the following point:

- Tighten new ignition switch mounting bolt (1) with the special tool until head (2) of each bolt (1) is broken off.

Special tool

: 09930-11940

: 09940-63110

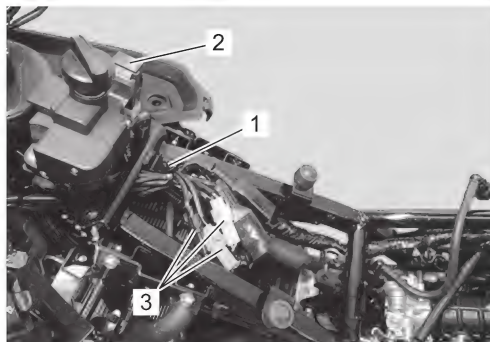


IF04K1180022-02

Keyless Start Model

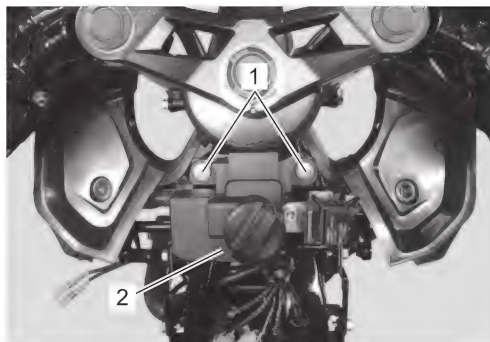
Removal

- 1) Remove the front fairing. (Page 9D-22)
- 2) Remove the fuel tank cover. (Page 9D-27)
- 3) Remove the fuel tank. (Page 1G-9)
- 4) Remove the clamp (1) and the ignition relay (2), and then disconnect the ignition switch couplers (3).



IH23K1180017-01

- 5) Remove the ignition switch mounting bolts (1) with a chisel.
- 6) Remove the ignition switch (2).



IH23K1180018-01

Installation

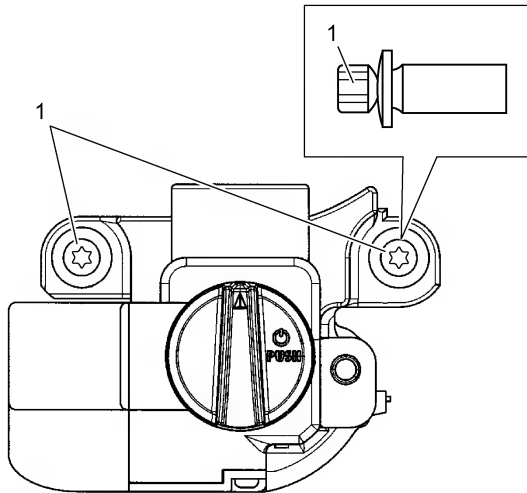
Install the ignition switch in the reverse order of removal. Pay attention to the following point:

- Tighten new ignition switch mounting bolts (1) with the special tool until head of each bolt is broken off.

Special tool

: 09930-11940

: 09940-63110



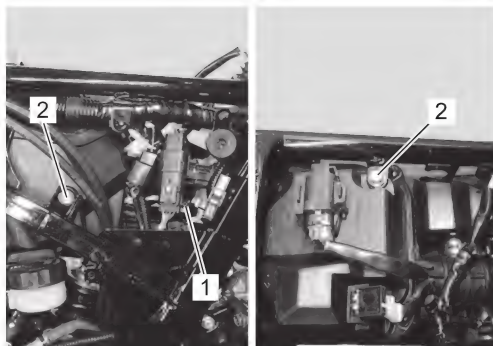
IH23K1180019-02

Keyless Control Unit Removal and Installation

BENH23K21806010

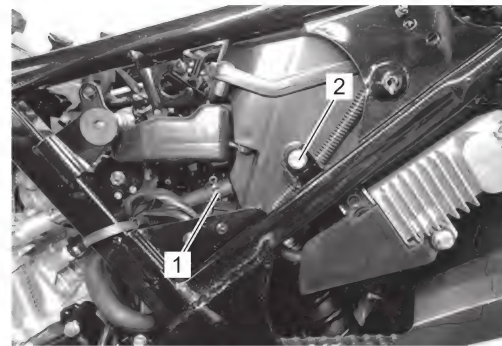
Removal

- 1) Remove the front fairing. (Page 9D-22)
- 2) Remove the frame cover. (Page 9D-30)
- 3) Remove the fuel tank. (Page 1G-9)
- 4) Remove the rear fender front. (Page 9D-31)
- 5) Loosen the air cleaner outlet tube clamp screw (1) and remove the bolts (2).



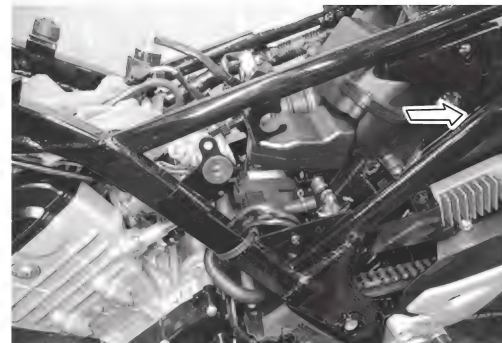
IH23K1180020-01

- 6) Disconnect the PCV hose (1) and remove the bolt (2).



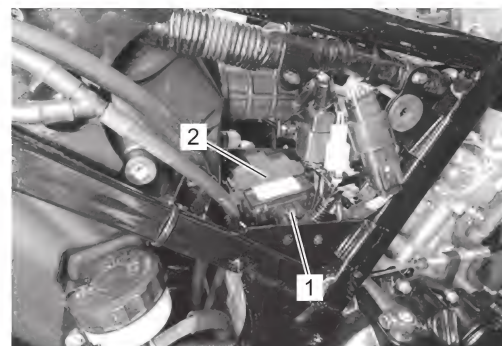
IH23K1180021-01

- 7) Move the air cleaner box backward.



IH23K1180022-01

- 8) Disconnect the coupler (1) and remove the keyless control unit (2).



IH23K1180023-01

1H-12 Ignition System:

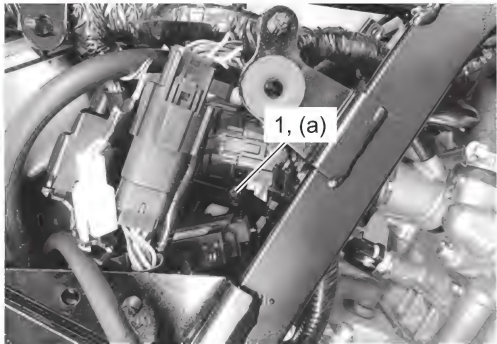
Installation

Install the keyless control unit in the reverse order of removal. Pay attention to the following points:

- Match the upper surfaces of the keyless control unit and the keyless controller holder, and assemble.
☞ (Page 1H-4)
- Tighten the outlet tube clamp (1) to the specified torque.

Tightening torque

Outlet tube (a): 1.5 N·m (0.15 kgf-m, 1.10 lbf-ft)

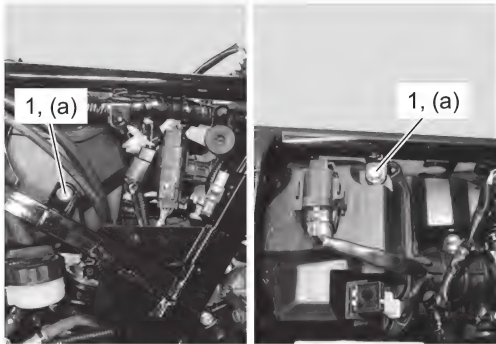


IH23K1180024-01

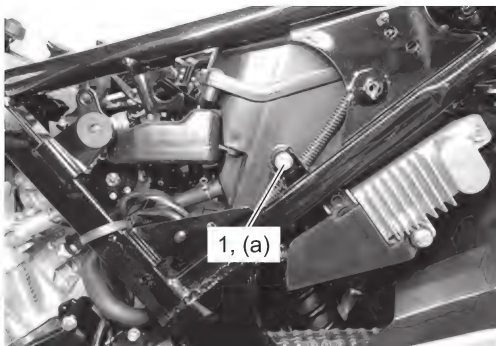
- Tighten the air cleaner bolts (1) to the specified torque.

Tightening torque

Air cleaner bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IH23K1180025-02



IH23K1180026-01

Specifications

Tightening Torque Specifications

BENH23K21807001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Spark plug	11	1.1	8.5	☞ (Page 1H-5)
Ignition coil mounting bolt	11	1.1	8.1	☞ (Page 1H-6)
Outlet tube	1.5	0.15	1.10	☞ (Page 1H-12)
Air cleaner bolt	10	1.0	7.5	☞ (Page 1H-12)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

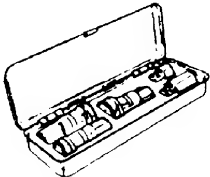
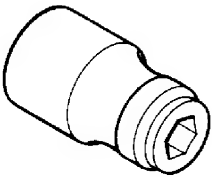
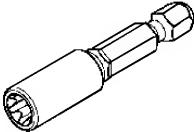
“Ignition Coil Construction” (Page 1H-4)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Special Tool

BENH23K21808001

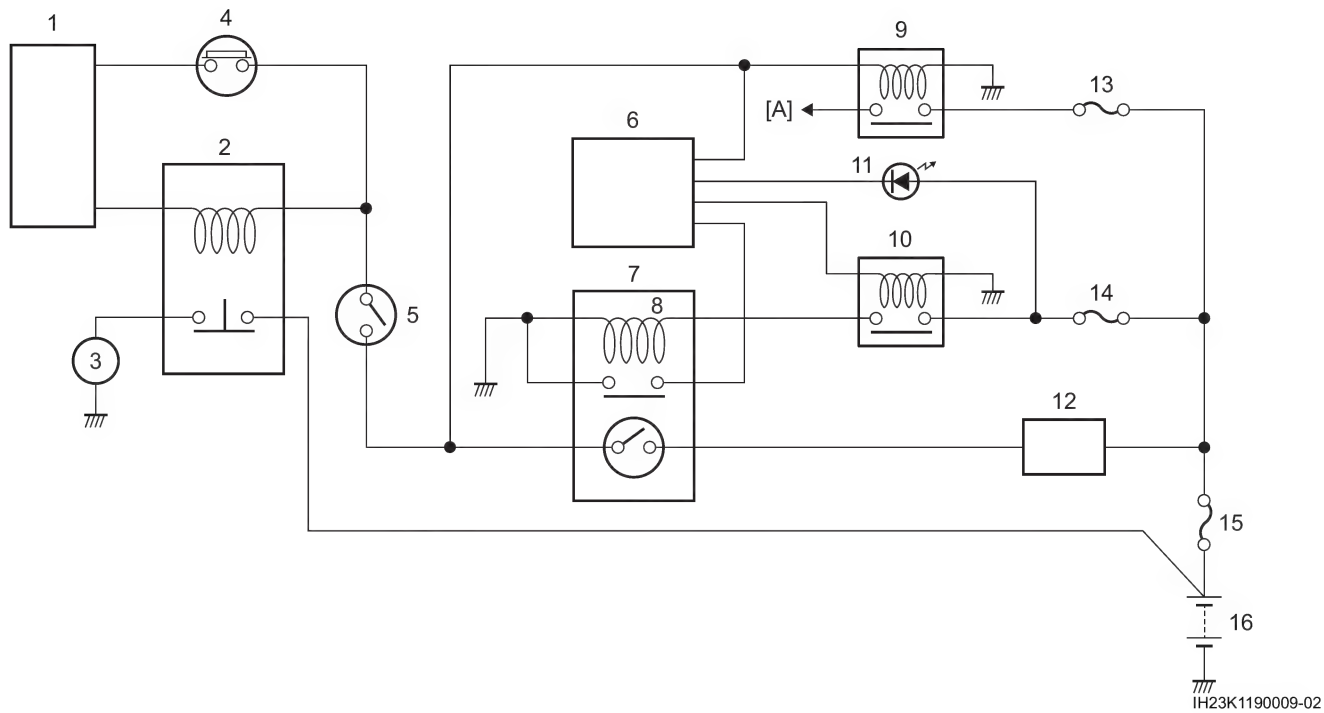
<p>09930-10121</p> <p>Spark plug socket set</p> <p>☞ (Page 1H-5) /</p> <p>☞ (Page 1H-5)</p>		<p>09930-11940</p> <p>Torx® bit holder (3/8 sq.)</p> <p>Torx® is the registered trademark of Camcar Division of Textron inc. U.S.A.</p> <p>☞ (Page 1H-10) /</p> <p>☞ (Page 1H-11)</p>	
<p>09940-63110</p> <p>Torx® bit (E8)</p> <p>Torx® is the registered trademark of Camcar Division of Textron inc. U.S.A.</p> <p>☞ (Page 1H-10) /</p> <p>☞ (Page 1H-11)</p>			

Starting System

Schematic and Routing Diagram

Starting System Diagram

BENH23K21902001



[A]: To each lights	6. Keyless control unit	12. Regulator/rectifier
1. ECM	7. Ignition switch	13. Sub fuse
2. Starter relay	8. Ignition solenoid	14. Fan fuse
3. Starter motor	9. Main relay	15. Main fuse
4. Starter switch	10. Ignition relay	16. Battery
5. Engine stop switch	11. Keyless indicator light	

Component Location

Starting System Components Location

BENH23K21903001

Refer to “Electrical Components Location” in Section 0A (Page 0A-5).

Diagnostic Information and Procedures

Starting System Symptom Diagnosis

BENH23K21904001

Possible symptoms of starting system trouble are as follows:

- Starter motor does not run.
- Engine does not turn though the starter motor runs.

Proper diagnosis must be made to determine in which of the battery, wiring harness, starting motor and engine the cause of each trouble lies.

Before removing the starting motor, check the following items to identify most possible cause of trouble.

- Condition of trouble
- Tightness of battery terminals (including ground cable connection on engine) and starting motor terminals
- Discharge of battery
- Mounting of starting motor

Condition	Possible cause	Correction / Reference Item
Stater motor does not run	Battery voltage is too low.	Check battery. (Page 1J-10)
	Poor battery terminal connection.	Check terminal connection or replace battery. (Page 1J-11)
	Poor ground cable connection.	Tighten ground cable.
	Blown fuse.	Replace fuse and check its circuit.
	Brushes not seating properly on starter motor. commutator.	Repair or replace. (Page 1I-7)
	Defective relays.	Replace. (Page 1I-8) (Page 1H-8)
	Defective switches.	Replace. (Page 1H-9)
	Defective ECM.	Replace. (Page 1C-2)
	Open circuit in wire harness.	Repair wiring. (Page 9A-2)
	Remote controller battery voltage is too low.	Replace. (Page 1C-15)
	The remote controller will not authenticated.	Registration. (Page 1C-12)
Engine does not turn though the starter motor runs	Faulty starter clutch.	Replace. (Page 1I-9)
	Faulty starter idle gear.	Replace.
	Faulty starter pinion gear.	Replace. (Page 1I-6)

Starter Motor Will Not Run

BENH23K21904002

Troubleshooting

Step 1

Sub relay operating sound check

- 1) Turn the ignition switch on and check for a click from the sub relay.

Does the sub relay click?

Yes Go to Step 2.

- No
- Faulty sub relay.
 - Faulty ignition switch.
 - Faulty regulator/rectifier.
 - Open circuit in wire harness.

Step 2

Starter switch input circuit check

- 1) Turn the ignition switch off and disconnect the starter switch coupler.

- 2) Check for proper terminal connection to the starter switch coupler.
- 3) If connection is OK, turn the ignition switch on.
- 4) Check that voltage between O wire terminal and ground is battery voltage.

Is check result OK?

Yes Go to Step 3.

- No
- Faulty "A1" circuit.
 - Open circuit in wire harness.

Step 3

Starter switch check

- 1) Turn the ignition switch off.
- 2) Check for starter switch. (Page 11-12)

Is check result OK?

- Yes Go to Step 4.
- No Faulty starter switch.

Step 4

Starter switch signal circuit check

- 1) Disconnect the ECM coupler.
- 2) Check for proper terminal connection to the ECM coupler.
- 3) If connection is OK, check the following points.
 - Resistance of Y/G circuit: less than 1 Ω
 - Resistance between Y/G wire terminal and ground: infinity
 - Resistance between Y/G wire terminal and other terminal at starter switch coupler: infinity

Is check result OK?

- Yes Go to Step 5.
- No Faulty "A2" circuit.

Step 5

Starter relay operating sound check

- 1) Connect the starter switch and ECM coupler.
- 2) Turn the ignition switch on.
- 3) Push the starter switch and check for a click from the starter relay.

Does the starter relay click?

- Yes Go to Step 10.
- No Go to Step 6.

Step 6

Starter relay power supply circuit (coil side) check

- 1) Turn the ignition switch off and disconnect the starter relay coupler.
- 2) Check for proper terminal connection to the starter relay terminal.
- 3) If connection is OK, turn the ignition switch on.
- 4) Check that voltage between O/B wire terminal and ground is battery voltage.

Is check result OK?

- Yes Go to Step 7.
- No Faulty "B1" circuit.

Step 7

Starter relay check

- 1) Turn the ignition switch off.

- 2) Check for starter relay. (Page 11-9)

Is check result OK?

- Yes Go to Step 8.
- No Faulty starter relay.

Step 8

Starter relay drive circuit check

- 1) Disconnect the ECM coupler.
- 2) Check for proper terminal connection to the ECM coupler.
- 3) If connections are OK, check the following points.
 - Resistance of B/Y circuit: less than 1 Ω
 - Resistance between B/Y wire terminal and ground: infinity
 - Resistance between B/Y wire terminal and other terminal at starter relay coupler: infinity

Is check result OK?

- Yes Go to Step 9.
- No Faulty "B3" circuit.

Step 9

ECM ground circuit check

- 1) Check that resistance between B/W (C1) wire terminal and ground is less than 1 Ω .

Is check result OK?

- Yes Faulty ECM.
- No Faulty "C1" circuit.

Step 10

Starter relay power supply circuit (switch side) check

- 1) Check that voltage between "B2" circuit and ground is battery voltage.

Is check result OK?

- Yes Go to Step 11.
- No Faulty "B2" circuit.

Step 11

Starter motor power supply circuit check

- 1) Connect the ECM and starter relay couplers.
- 2) Turn the ignition switch on.
- 3) Push the starter switch and check that voltage between "B4" circuit and ground is battery voltage.

Is check result OK?

- Yes Faulty starter motor.
- No
 - Faulty "B4" circuit.
 - Faulty "B5" circuit.

Starter Motor Runs But Does Not Crank the Engine

BENH23K21904003

Step 1

Check the starter clutch. (Page 11-11)

Is the starter clutch OK?

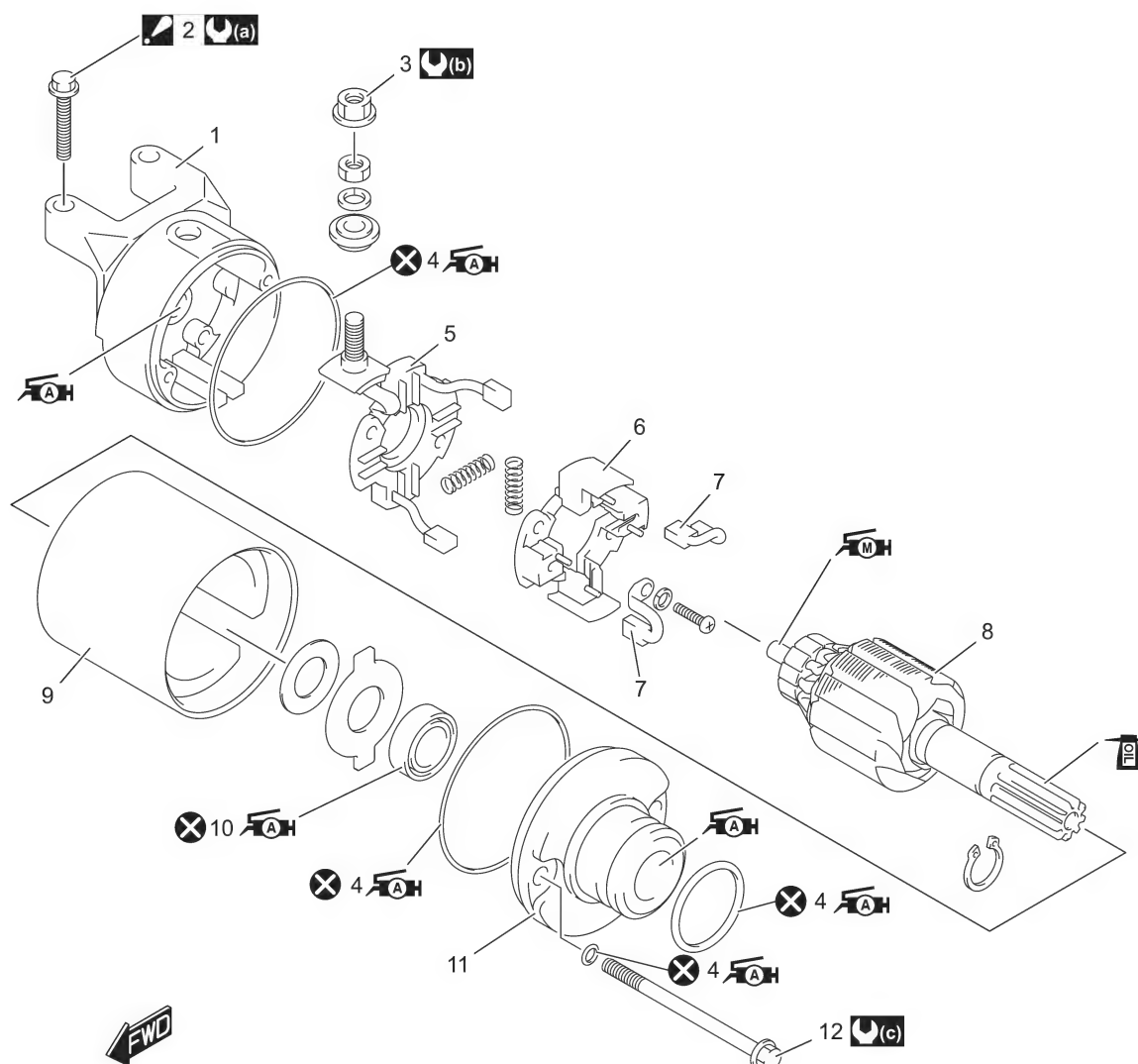
Yes Faulty starter motor.

No Faulty starter clutch.

Repair Instructions

Starter Motor Components

BENH23K21906001



IG12K1190003-02

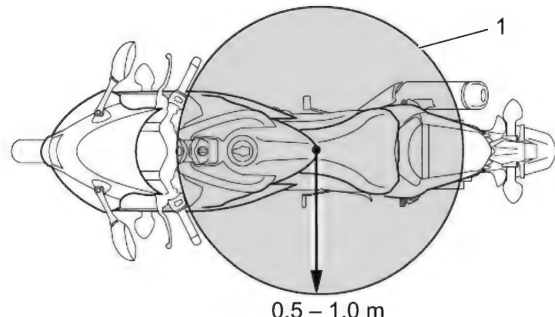
1. Rear bracket	8. Armature	⌚(c) : 2.7 N·m (0.28 kgf-m, 2.0 lbf-ft)
2. Starter motor mounting bolt : For installation, refer to "Starter Motor Assembly Removal and Installation" (Page 11-5).	9. Starter motor case	⌚AH : Apply grease.
3. Starter motor lead wire mounting nut	10. Oil seal	⌚MH : Apply moly past.
4. O-ring	11. Front bracket	⌚ : Apply engine oil.
5. Brush sub assembly	12. Housing bolt	⊗ : Do not reuse.
6. Brush holder	⌚(a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)	
7. Brush	⌚(b) : 4.9 N·m (0.50 kgf-m, 3.65 lbf-ft)	

Keyless Start System Inspection

BENH23K21906002

Riding Mode Inspection

- 1) Check that the remote controller is in the communication mode.
- 2) Place the remote controller within the engine operation range (1).



IH23K1190010-01

- 3) Check that the ignition switch has been set to the OFF or LOCK position, and then, push the request switch.
- 4) Check that the keyless indicator light is turned on.
- 5) While the keyless indicator light is on, set the ignition switch to ON position.
- 6) Inspect the combination meter operation.
- 7) Check that the engine is started when the starter switch is pushed with the engine stop switch set to the RUN position. (all interlocks for engine start are released)

Alighting Mode Inspection

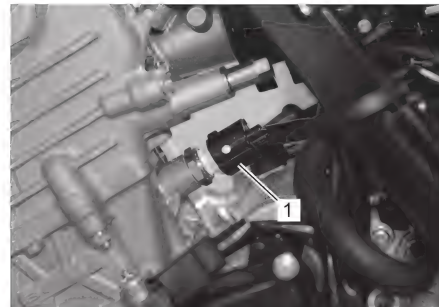
- 1) Check the hazard light blinks once when the ignition key is turned to OFF.
- 2) Check that the ignition key can be removed at the ignition switch "•" (ACC) position when the keyless indicator light is on.
- 3) Check that the operation switch mode is changed to the alighting mode when no operation is made for 4 seconds after the request switch is pushed and the keyless indicator light is turned on.

Starter Motor Assembly Removal and Installation

BENH23K21906003

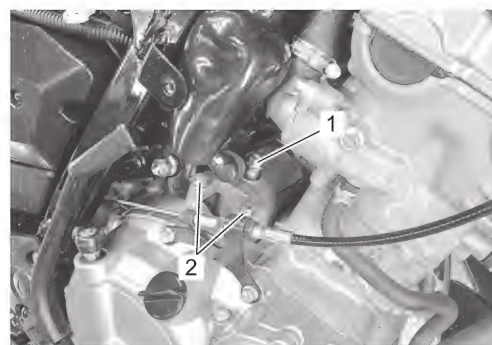
Removal

- 1) Turn the ignition switch OFF and disconnect the battery (-) lead wire. Refer to "Battery Removal and Installation" in Section 1J (Page 1J-11).
- 2) Open the front box lid.
- 3) Remove the right under cowling. (Page 9D-25)
- 4) Disconnect the ECT sensor coupler (1).



IH23K1190001-01

- 5) Disconnect the starter motor read wire (1) and remove the starter motor mounting bolts (2).



IG12K1190005-01

- 6) Remove the starter motor (1).



IG12K1190006-01

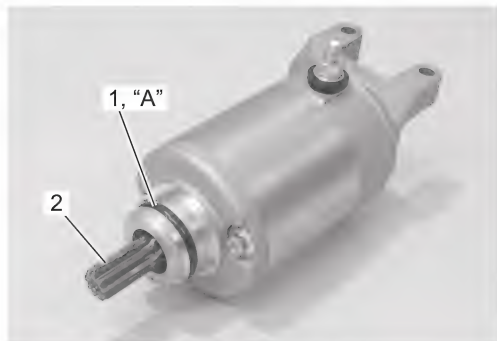
Installation

Install the starter motor in the reverse order of removal. Pay attention to the following points:

- Apply grease to a new O-ring (1).

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)

- Apply engine oil to the armature shaft (2).



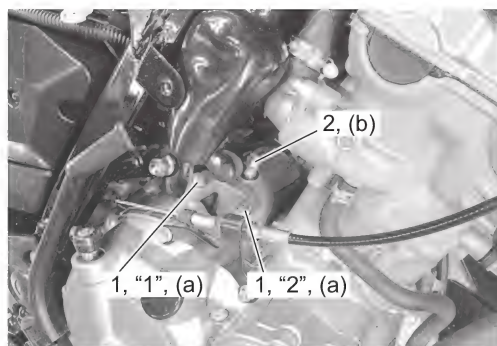
IG12K1190007-02

- Tighten the starter motor mounting bolts (1) to the specified torque in order of "1" → "2".
- Set the starter motor read wire in the specified position and tighten the nut (2) to the specified torque. (Page 9A-7)

Tightening torque

Starter motor mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Starter motor lead wire mounting nut (b): 4.9 N·m (0.50 kgf-m, 3.65 lbf-ft)



IG12K1190008-02

Starter Motor Disassembly and Reassembly

BENH23K21906004

Disassembly

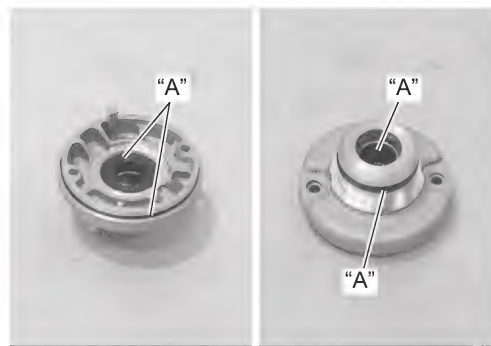
Disassemble the starter motor. (Page 11-4)

Reassembly

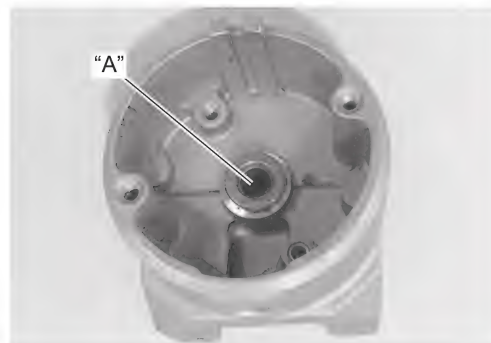
Reassemble the starter motor in the reverse order of disassembly. Pay attention to the following points:

- Replace the O-rings with new ones.
- Apply grease to the lip of the oil seal and bushings.

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)



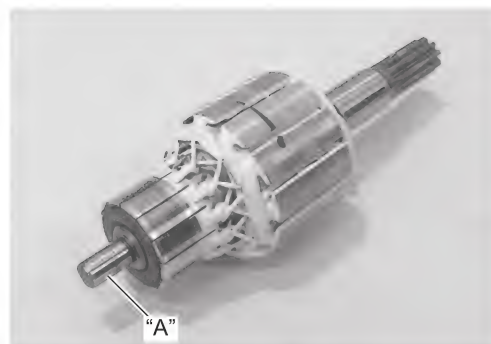
IG12K1190009-01



IG12K1190010-01

- Apply a small quantity of moly paste to the armature shaft.

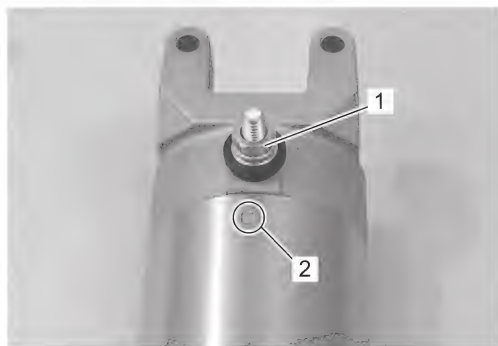
"A": Assembly lubrication 99000-25140 (SUZUKI MOLY PASTE)



IG12K1190011-01

1I-7 Starting System:

- Align the terminal (1) on the rear bracket with the punch mark (2) on the starter motor case.



IG12K1190012-01

- Align the dent (1) near the projection on the front bracket with the line mark (2) on the starter motor case.



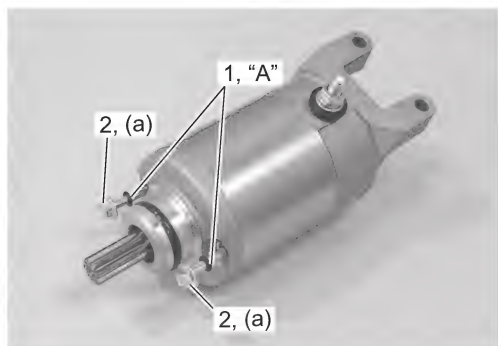
IG12K1190013-01

- Apply grease to a new O-ring (1) and then tighten the housing bolts (2) to the specified torque.

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)

Tightening torque

Housing bolt (a): 2.7 N·m (0.28 kgf-m, 2.00 lbf-ft)



IG12K1190014-01

Starter Motor Inspection

BENH23K21906005

Refer to "Starter Motor Disassembly and Reassembly" (Page 1I-6).

Carbon Brush

Inspect the carbon brushes for abnormal wear, cracks or smoothness in the brush holder.

If any damages are found, replace the brush holder or brush terminal set with a new one.

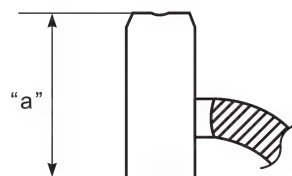
Make sure that the length "a" is not less than the service limit. If this length becomes less than the service limit, replace the brush with a new one.

Special tool

09900-20102

Starter motor brush length "a"

[Limit]: 3.5 mm (0.14 in)



IF34J1190054-01

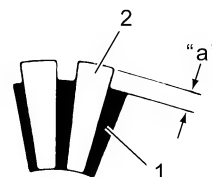
Commutator

Inspect the commutator for discoloration, abnormal wear or undercut "a".

If the commutator is abnormally worn, replace the armature.

If the commutator surface is discolored, polish it with #400 sandpaper and wipe it using a clean, dry cloth.

If there is no undercut, scrape out the insulator (1) with a saw blade.



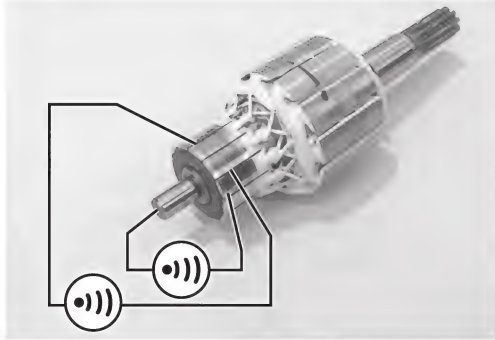
2. Segment

IE31J1190009-01

Armature Coil

Measure for continuity between each segment. Measure for continuity between each segment and the armature shaft.

If there is no continuity between the segments or there is continuity between the segments and shaft, replace the starter motor assembly with a new one.

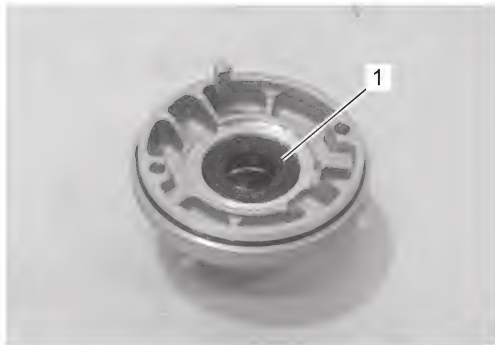


IG12K1190015-01

Oil Seal

Check the seal lip (1) for damage.

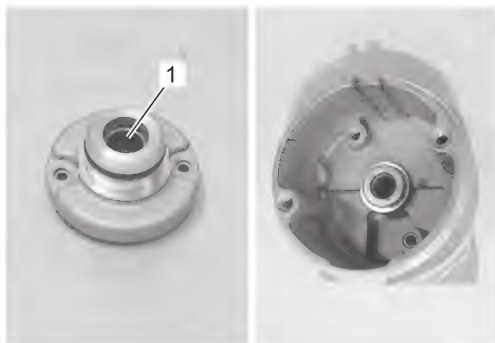
If any damage is found, replace the starter motor assembly with a new one.



IG12K1190016-01

Bushing

Inspect the bushing (1) for wear and damage. If any defects are found, replace the starter motor assembly with a new one.



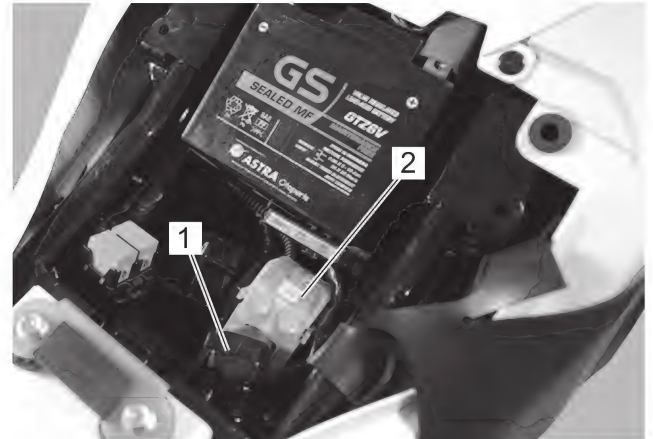
IG12K1190017-01

Starter Relay Removal and Installation

BENH23K21906006

Removal

- 1) Disconnect the battery (–) lead wire. Refer to “Battery Removal and Installation” in Section 1J (Page 1J-11).
- 2) Disconnect the starter relay coupler (1) and remove the starter relay cover (2).



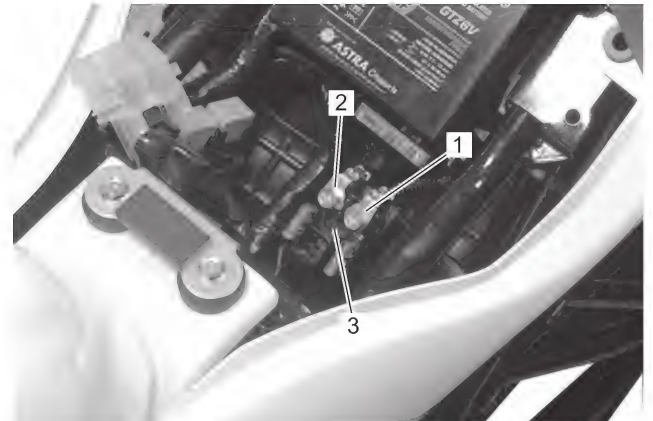
IH23K1190002-01

- 3) Disconnect the starter motor lead wire (1) and battery (+) lead wire (2).

NOTE

Be sure to disconnect the starter motor lead wire first, then disconnect the battery (+) lead wire.

- 4) Remove the starter relay (3).



IH23K1190004-02

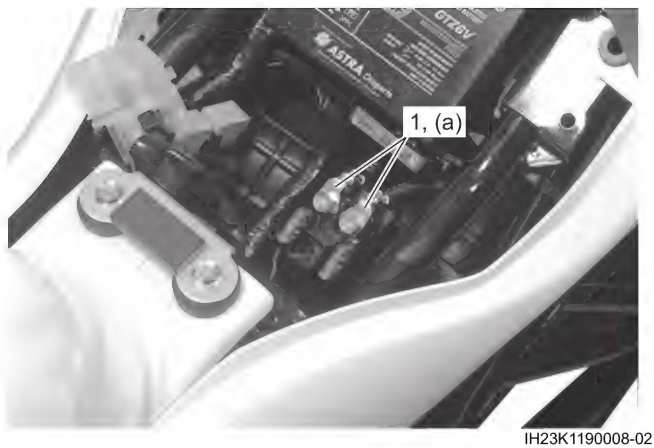
Installation

Install the starter relay in the reverse order of removal. Pay attention to the following point:

- Tighten the starter relay terminal nuts (1) to the specified torque.

Tightening torque

Starter relay terminal nut (a): 4.4 N·m (0.45 kgf-m, 3.25 lbf-ft)



Starter Relay Inspection

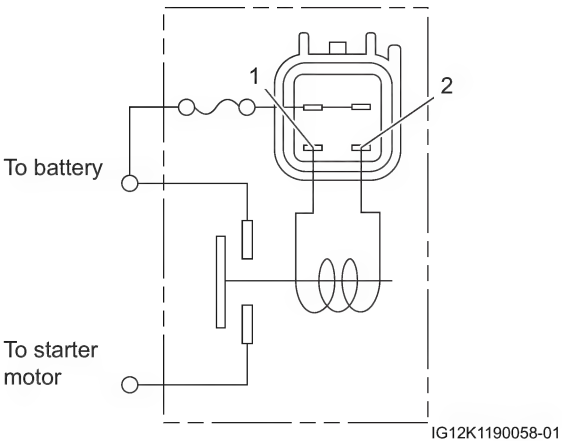
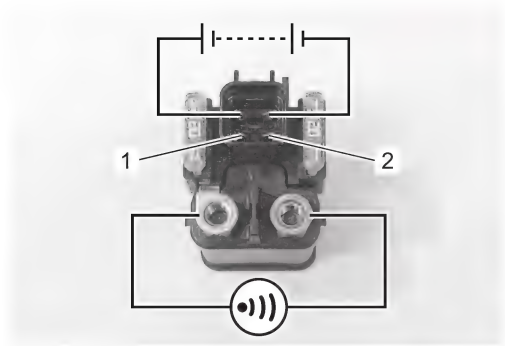
BENH23K21906007

Refer to “Starter Relay Removal and Installation” (Page 1I-8).

- 1) Apply 12 V to (1) and (2) terminals and check for continuity between the positive and negative terminals using the multi circuit tester. If the starter relay clicks and continuity is found, the relay is OK.

NOTICE

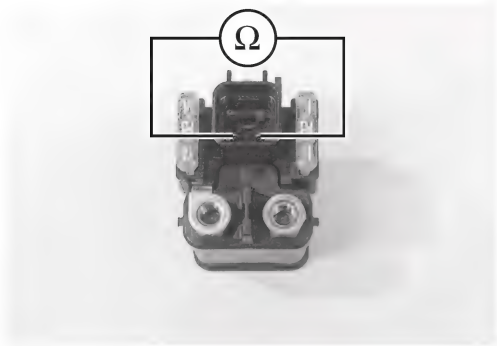
Do not apply battery voltage to the starter relay for five seconds or more, otherwise the relay coil may overheat and get damaged.



- 2) Measure the relay coil resistance between the terminals using the circuit tester. If the resistance is not within the specified value, replace the starter relay with a new one.

Starter relay resistance

[Standard]: 3 – 6 Ω

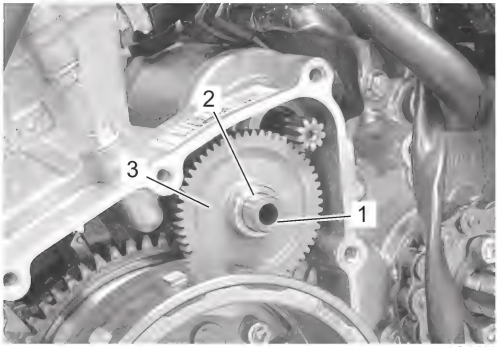


Starter Clutch Removal and Installation

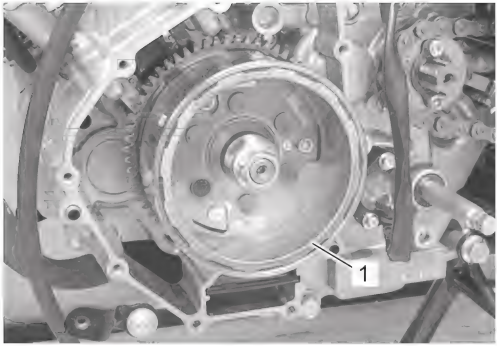
BENH23K21906008

Removal

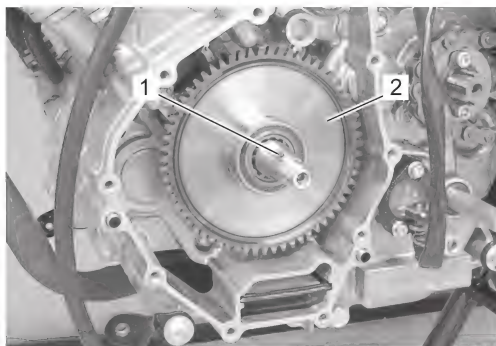
- 1) Remove the generator cover, gasket and duel pins. Refer to “Generator Removal” in Section 1J (Page 1J-5).
- 2) Remove the shaft (1), spacer (2) and starter idle gear (3).



- 3) Remove the generator rotor (1). (Page 1J-5)

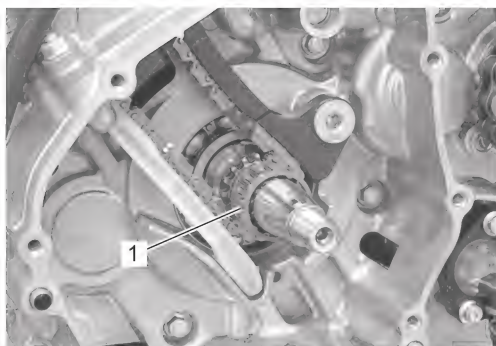


- 4) Remove the key (1) and starter clutch gear (2).



IG12K1190026-01

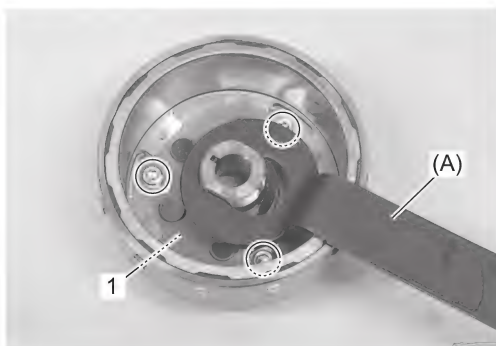
- 5) Remove the starter clutch gear bearing (1).



IG12K1190027-01

- 6) Hold the generator rotor with the special tool and remove the starter clutch (1).

Special tool
(A): 09930-44521

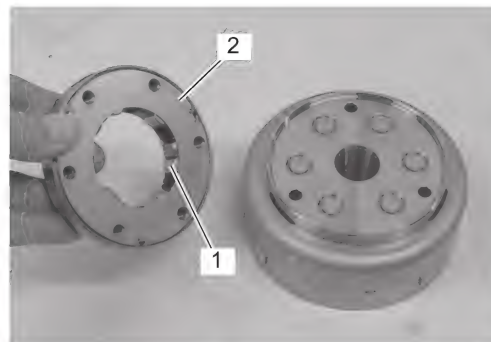


IG12K1190028-01

Installation

Install the starter clutch in the reverse order of removal. Pay attention to the following points:

- Apply engine oil to the one way clutch (1).
- Install the one way clutch pointing the plate side (2) toward the generator rotor.



IG12K1190029-01

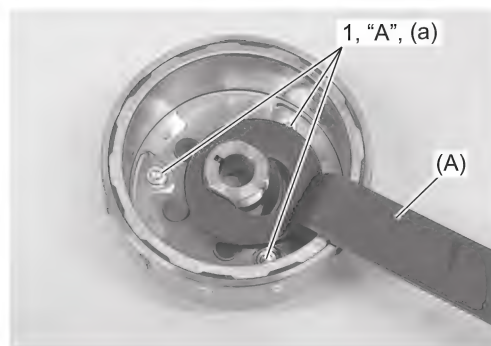
- Apply thread lock to the starter clutch bolts (1), and then tighten them to the specified torque with the special tool.

Special tool
(A): 09930-44521

"A": Thread lock cement 99000-32150 (THREAD LOCK CEMENT 1322D)

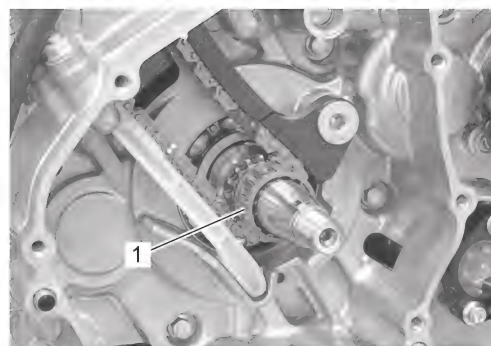
Tightening torque

Starter clutch bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IG12K1190030-01

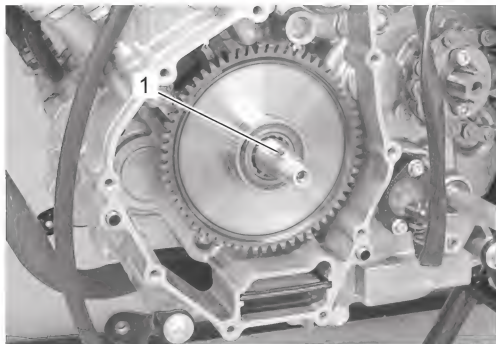
- Apply engine oil to the starter clutch gear bearing (1) and install it to the crankshaft.



IG12K1190027-01

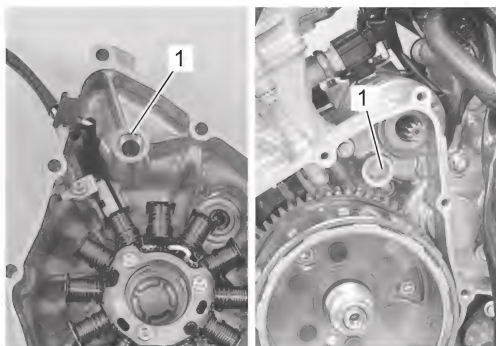
1I-11 Starting System:

- Fit the key (1) in the key slot on the crankshaft.

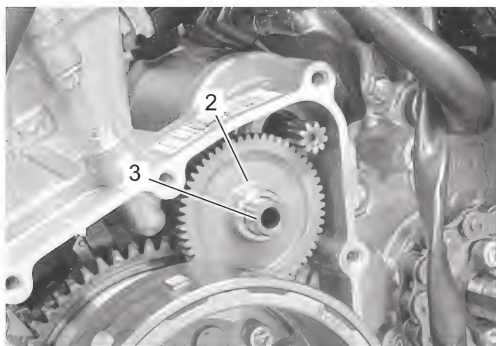


IG12K1190031-01

- Install the generator rotor onto crankshaft. Refer to "Generator Installation" in Section 1J (Page 1J-7).
- Apply engine oil to the starter idle gear shaft holes (1), starter idle gear (2) and shaft (3).



IG12K1190032-01



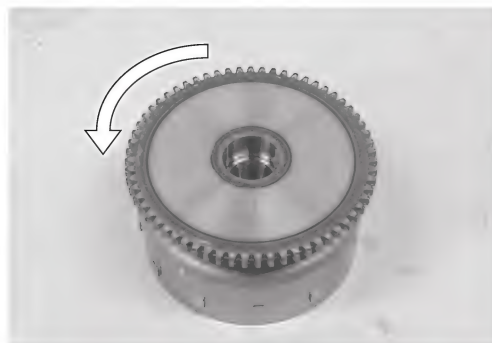
IG12K1190033-01

Starter Clutch Inspection

BENH23K21906009

Starter Clutch

- 1) Install the starter clutch gear onto the starter clutch.
- 2) Turn the starter clutch gear by hand to inspect the starter clutch for a smooth movement. The gear turns in one direction only. If a large resistance is felt for rotation, inspect the starter clutch or the starter clutch contacting surface on the starter clutch gear for wear or damage. If they are found to be damaged, replace them with new ones.



IG12K1190034-01

Starter Idle Gear

Inspect the starter idle gear for wear or damage. If any defects are found, replace it with a new one.



IG12K1190035-01

Starter Clutch Gear Bearing

Inspect the starter clutch gear bearing for any abnormality, especially cracks. If any defects are found, replace the starter clutch gear bearing with a new one.



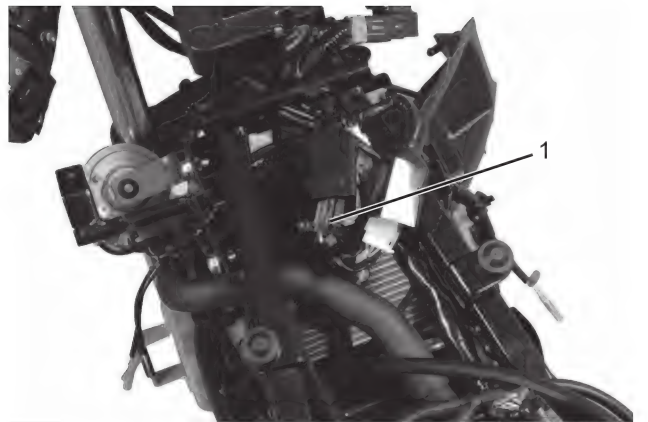
IG12K1190036-01

Starter Switch Inspection

BENH23K21906010

GSX R 150 Model

- 1) Remove front seat. (Page 9D-20)
- 2) Remove front fairing. (Page 9D-22)
- 3) Remove frame cover. (Page 9D-30)
- 4) Remove fuel tank. (Page 1G-9)
- 5) Disconnect the right handle switch lead wire coupler (1).



IH23K1190003-02

- 6) Inspect the starter switch for continuity with a tester. If any defect is found, replace the right handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-5).

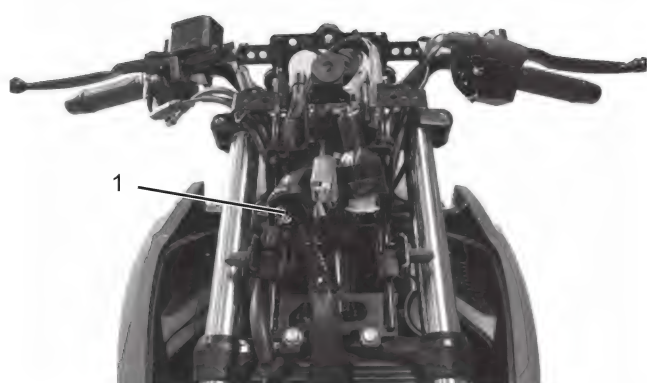
Color Position	Y/G	O/W
•		
PUSH		

IH23K1190005-01

- 7) After finishing the starter switch inspection, install the removed parts.

GSX S 150 Model

- 1) Remove front headlight assembly. (Page 9B-2)
- 2) Disconnect the right handle switch lead wire coupler (1).



IH23K2190001-01

- 3) Inspect the starter switch for continuity with a tester. If any defect is found, replace the right handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-5).

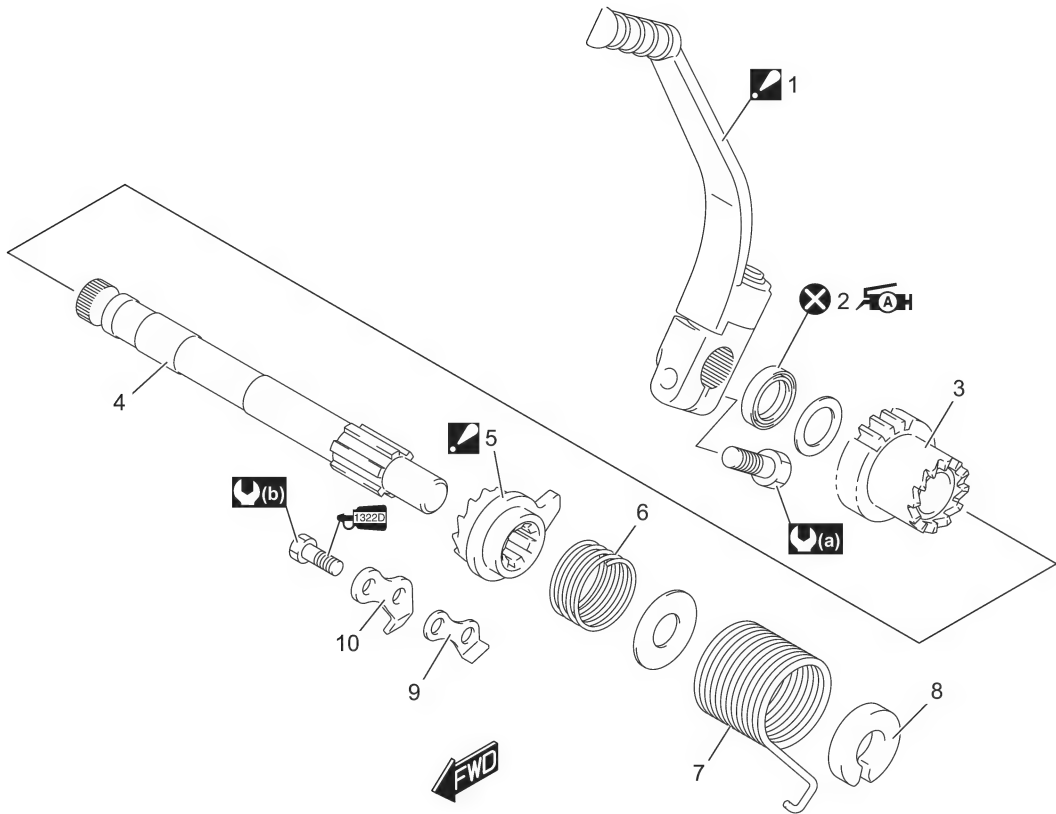
Color Position	Y/G	O/W
•		
PUSH		

IH23K1190005-01








- 4) After finishing the starter switch inspection, install the removed parts.

Kick Starter Components (If Equipped)

BENH23K21906011



IG12K1190039-02

 1. Kick starter lever For installation, refer to "Kick Starter Lever Removal and Installation" (Page 11-14).	6. Kick starter spring	 (a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
2. Kick starter shaft oil seal	7. Return spring	 (b) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
3. Kick starter drive gear	8. Kick starter return spring guide	 (A) : Apply grease oil.
4. Kick starter shaft	9. Kick starter guide	 (1322D) : Apply thread lock to the thread part.
 5. Kick starter For installation, refer to "Kick Starter Shaft Removal and Installation" (Page 11-14).	10. Kick starter stopper	 : Do not reuse.

Kick Starter Lever Removal and Installation

BENH23K21906012

Removal

- 1) Remove the kick starter lever (1).



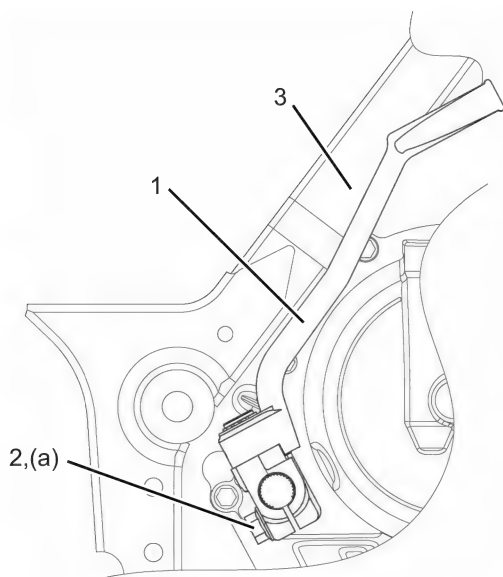
IH23K1190006-02

Installation

- 1) Install the kick starter lever (1) as shown in the illustration.
- 2) Tighten the kick starter lever bolt (2) to the specified torque.

Tightening torque

Kick starter lever bolt (a): 18 N·m (1.83 kgf-m, 13.2 lbf-ft)



IH23K1190007-01

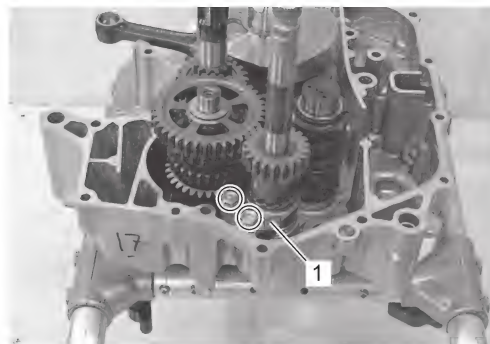
3. Frame

Kick Starter Shaft Removal and Installation

BENH23K21906013

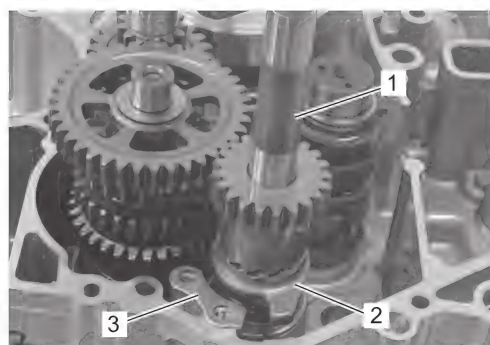
Removal

- 1) Remove the engine assembly. (Page 1D-44)
- 2) Remove the right crankcase. (Page 1D-47)
- 3) Remove the kick starter guide (1).



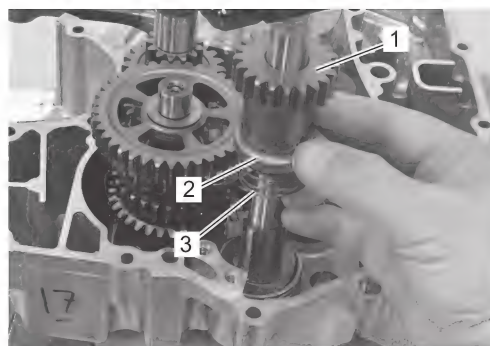
IG12K1190042-01

- 4) Turn the kick starter shaft (1) until the kick starter (2) is free of the kick starter stopper (3), and then remove the kick starter stopper.



IG12K1190043-01

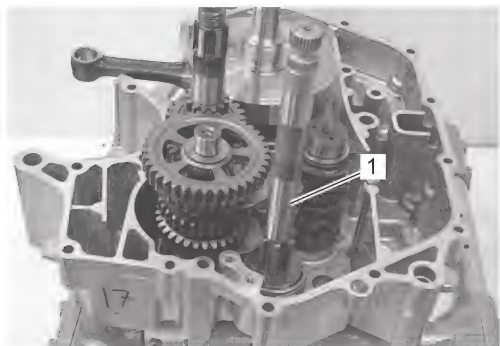
- 5) Remove the kick starter drive gear (1), kick starter (2) and kick starter spring (3).



IG12K1190044-01

11-15 Starting System:

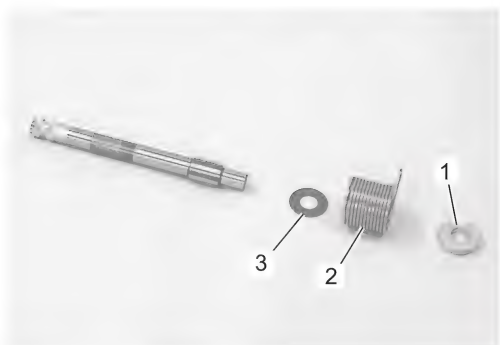
6) Remove the kick starter shaft (1).



IG12K1190045-02

7) Remove the following parts from the kick starter shaft.

- Kick shaft return spring guide (1)
- Kick shaft return spring (2)
- Kick starter spring plate (3)

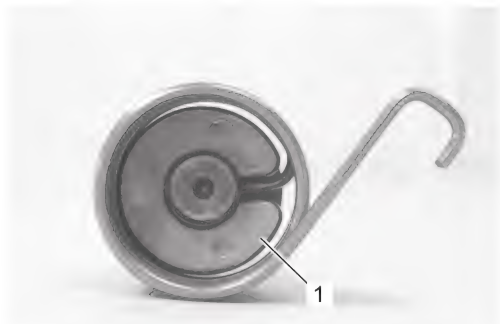


IG12K1190046-01

Installation

Install the kick starter shaft in the reverse order of removal. Pay attention to the following points:

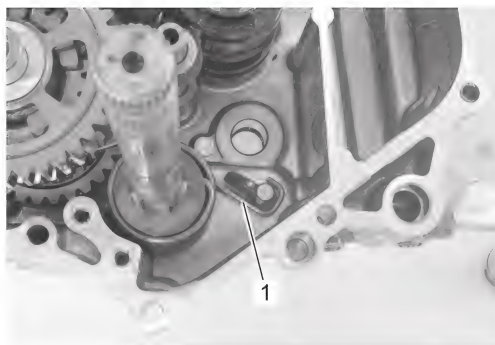
- Install the return spring guide (1) to the kick starter shaft as shown.



IG12K1190047-01

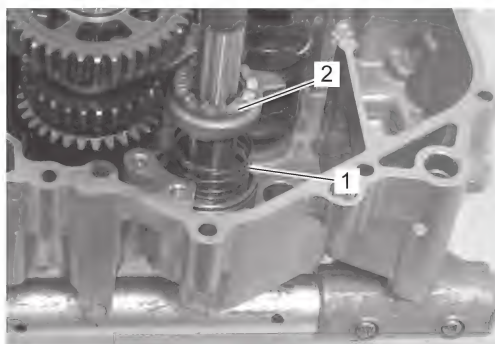
- Install the kick starter shaft as follows.

a. Set the kick shaft return spring (1) as shown.



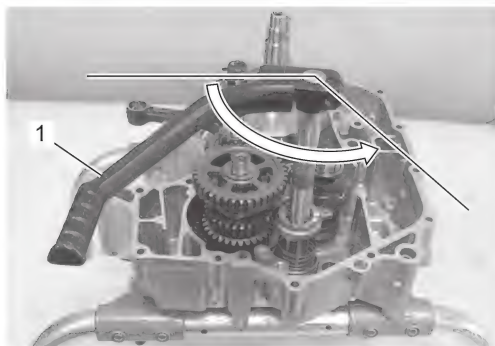
IG12K1190048-01

b. Install the kick starter spring (1) and kick starter (2).



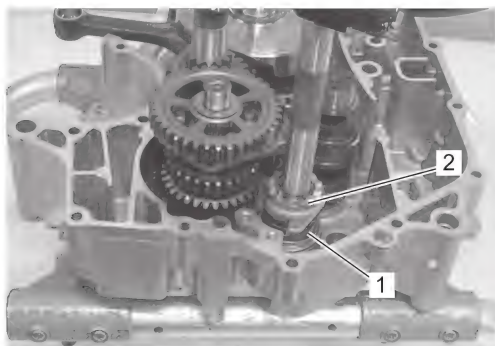
IG12K1190049-01

c. Install the kick starter lever (1) and turn the starter shaft counter-clockwise approx. 135° and hold it in place.



IG12K1190050-01

d. Install the kick starter spring (1) and kick starter (2).



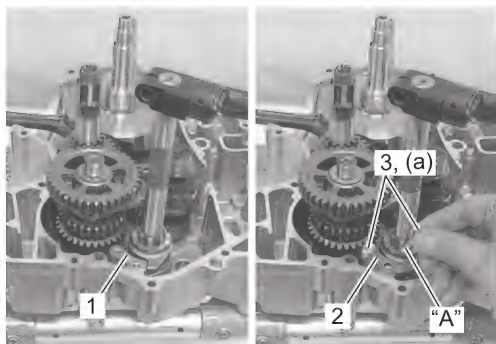
IG12K1190051-01

- Install the kick starter stopper (1) and kick starter guide (2).
- Apply thread lock to the kick starter guide bolts (3) and tighten them to the specified torque.

“A”: Thread lock cement 99000–32150 (THREAD LOCK CEMENT 1322D)

Tightening torque

Kick starter guide bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



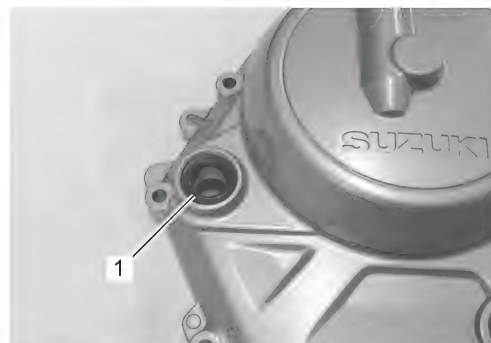
IG12K1190052-01

Kick Starter Shaft Oil Seal Removal and Installation

BENH23K21906014

Removal

- 1) Remove the right crankcase. (Page 1D-47)
- 2) Remove the kick starter oil seal (1).



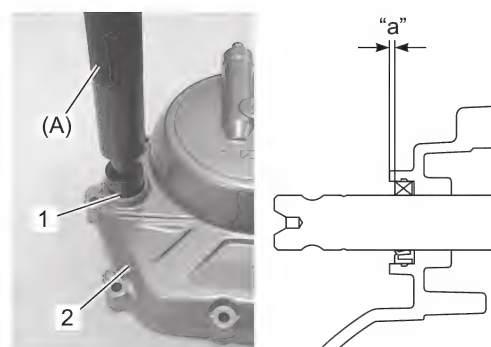
IG12K1190053-01

Installation

- 1) Install the kick starter oil seal (1) using the special tool.

Special tool

(A): 09913–70210



IG12K1190054-01

2. Right crankcase

“a”: 1.0 – 2.0 mm (0.040 – 0.078 in)

- 2) Install the removed parts.

1I-17 Starting System:

Kick Starter Parts Inspection

BENH23K21906015

Refer to "Kick Starter Shaft Removal and Installation" (Page 1I-14).

Kick Starter Shaft

Inspect the kick starter shaft for wear or bend. If any defects are found, replace the kick starter shaft with a new one.



IG12K1190055-02

Return Spring

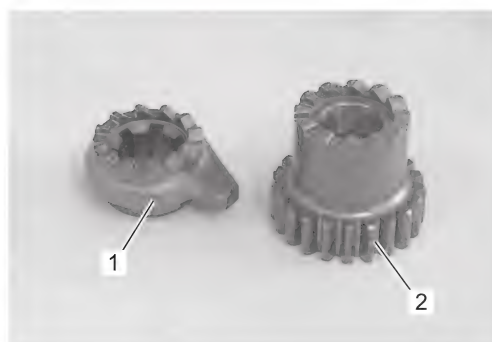
Inspect the return spring for damage or fatigue. If any defects are found, replace the return spring with a new one.



IG12K1190056-01

Kick Starter / Kick Starter Drive Gear / Kick Starter Idle Gear

Inspect the kick starter (1) and kick starter drive gear (2) for wear and damage. If any defects are found, replace the defective part with a new one.



IG12K1190057-01

Specifications

Tightening Torque Specifications

BENH23K21907001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Starter motor mounting bolt	10	1.0	7.5	☞ (Page 1I-6)
Starter motor lead wire mounting nut	4.9	0.50	3.65	☞ (Page 1I-6)
Housing bolt	2.7	0.28	2.00	☞ (Page 1I-7)
Starter relay terminal nut	4.4	0.45	3.25	☞ (Page 1I-8)
Starter clutch bolt	10	1.0	7.5	☞ (Page 1I-10)
Kick starter lever bolt	18	1.83	13.2	☞ (Page 1I-14)
Kick starter guide bolt	10	1.0	7.5	☞ (Page 1I-16)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

"Starter Motor Components" (Page 1I-4)

"Kick Starter Components (If Equipped)" (Page 1I-13)

"Fasteners Information" in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K21908001

Material	SUZUKI recommended product or Specification		Note
Assembly lubrication	SUZUKI MOLY PASTE	P/No.: 99000-25140	☞ (Page 1I-6)
Grease	SUZUKI SUPER GREASE A	P/No.: 99000-25011	☞ (Page 1I-6) / ☞ (Page 1I-6) / ☞ (Page 1I-7)
Thread lock cement	THREAD LOCK CEMENT 1322D	P/No.: 99000-32150	☞ (Page 1I-10) / ☞ (Page 1I-16)

NOTE

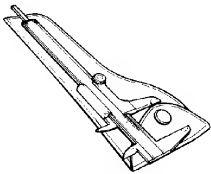
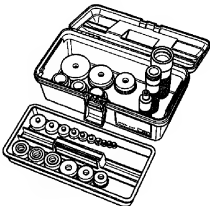
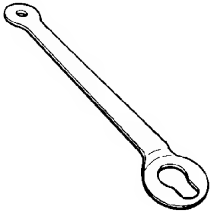
Required service material(s) is also described in:

“Starter Motor Components” (Page 1I-4)

“Kick Starter Components (If Equipped)” (Page 1I-13)

Special Tool

BENH23K21908002

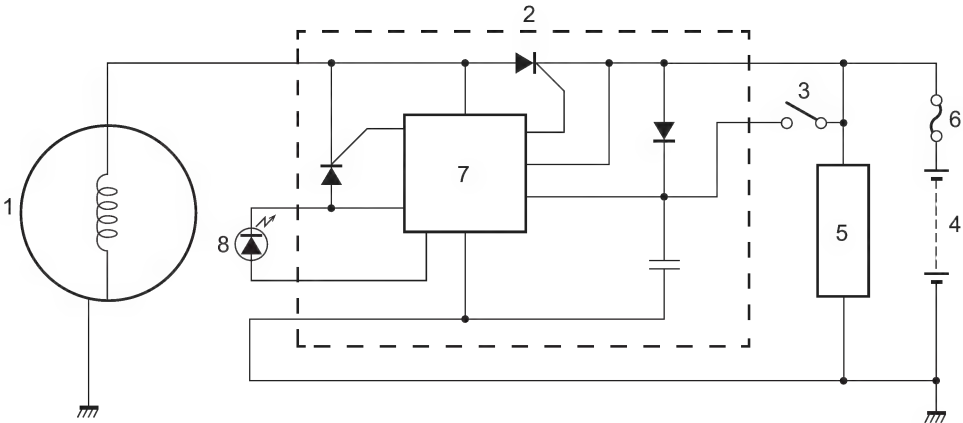
09900-20102 Vernier calipers (200 mm) ☞ (Page 1I-7)		09913-70210 Bearing installer set ☞ (Page 1I-16)	
09930-44521 Rotor holder ☞ (Page 1I-10) / ☞ (Page 1I-10)			

Charging System

Schematic and Routing Diagram

Charging System Diagram

BENH23K21A02001



IG12K11A0001-02

1. Generator	3. Ignition switch	5. Load	7. IC
2. Regulator/rectifier	4. Battery	6. Main fuse	8. LED headlight

Component Location

Charging System Components Location

BENH23K21A03001

Refer to “Electrical Components Location” in Section 0A (Page 0A-5).

Diagnostic Information and Procedures

Charging System Symptom Diagnosis

BENH23K21A04001

Condition	Possible cause	Correction / Reference Item
Generator does not charge	Open- or short-circuited lead wires, or loose lead connections.	<i>Repair, replace or connect properly.</i>
	Short-circuited, grounded or open generator coil.	<i>Replace.</i> <ul style="list-style-type: none"> • Removal: ⌚(Page 1J-5) • Installation: ⌚(Page 1J-7)
	Short-circuited or punctured regulator/rectifier.	<i>Replace. ⌚(Page 1J-9)</i>
Generator does charge, but charging rate is below the specification	Lead wires tend to get short- or open-circuited or loosely connected at terminals.	<i>Repair or retighten.</i>
	Grounded or open-circuited generator coil.	<i>Replace.</i> <ul style="list-style-type: none"> • Removal: ⌚(Page 1J-5) • Installation: ⌚(Page 1J-7)
	Defective regulator/rectifier.	<i>Replace. ⌚(Page 1J-9)</i>
	Defective cell plates in the battery.	<i>Replace the battery. ⌚(Page 1J-11)</i>
Generator overcharges	Internal short-circuit in the battery.	<i>Replace the battery. ⌚(Page 1J-11)</i>
	Damaged or defective regulator/rectifier.	<i>Replace. ⌚(Page 1J-9)</i>
	Poorly grounded regulator/rectifier.	<i>Clean and tighten ground connection.</i>
Unstable charging	Lead wire insulation frayed due to vibration, resulting in intermittent short-circuiting.	<i>Repair or replace.</i>
	Internally short-circuited generator.	<i>Replace.</i> <ul style="list-style-type: none"> • Removal: ⌚(Page 1J-5) • Installation: ⌚(Page 1J-7)
	Defective regulator/rectifier.	<i>Replace. ⌚(Page 1J-9)</i>
Battery overcharges	Faulty regulator/rectifier.	<i>Replace. ⌚(Page 1J-9)</i>
	Faulty battery.	<i>Replace. ⌚(Page 1J-11)</i>
	Poor contact of generator lead wire coupler.	<i>Repair.</i>
Battery runs down quickly	Trouble in charging system.	<i>Check the generator, regulator/rectifier and circuit connections and make necessary adjustments to obtain specified charging operation. ⌚(Page 1J-4)</i>
	Cell plates have lost much of their active materials a result of overcharging.	<i>Replace the battery and correct the charging system. ⌚(Page 1J-11)</i>
	Internal short-circuit in the battery.	<i>Replace the battery. ⌚(Page 1J-11)</i>
	Too low battery voltage.	<i>Recharge the battery fully. ⌚(Page 1J-10)</i>
	Too old battery.	<i>Replace the battery. ⌚(Page 1J-11)</i>
Battery "sulfation"	Incorrect charging rate. (When not in use battery should be checked at least once a month to avoid sulfation.)	<i>Replace the battery. ⌚(Page 1J-11)</i>
	The battery was left unused in a cold climate for too long.	<i>Replace the battery if badly sulfated. ⌚(Page 1J-11)</i>
"Sulfation", acidic white powdery substance or spots on surface of cell plates	Cracked battery case.	<i>Replace the battery. ⌚(Page 1J-11)</i>
	Battery has been left in a run-down condition for a long time.	<i>Replace the battery. ⌚(Page 1J-11)</i>

Battery Runs Down Quickly

BENH23K21A04002

Troubleshooting

Step 1

Check accessories which use excessive amounts of electricity.

Are accessories installed?

Yes Remove accessories.

No Go to Step 2.

Step 2

Check the battery for current leakage. ⚡ (Page 1J-4)

Is the battery for current leakage OK?

Yes Go to Step 3.

No

- Short circuit of wire harness.
- Faulty electrical equipment.

Step 3

Measure the regulated voltage between the battery terminals. ⚡ (Page 1J-4)

Is the regulated voltage OK?

Yes

- Faulty battery.
- Abnormal driving condition.

No Go to Step 4.

Step 4

Measure the resistance of the generator coil. ⚡ (Page 1J-4)

Is the resistance of generator coil OK?

Yes Go to Step 5.

No

- Faulty generator coil.
- Poor contact of couplers.

Step 5

Measure the generator no-load performance. ⚡ (Page 1J-4)

Is the generator no-load performance OK?

Yes Go to Step 6.

No Faulty generator.

Step 6

Inspect wirings.

Is the wirings OK?

Yes

- Faulty battery.
- Faulty regulator/rectifier.

No

- Short circuit of wire harness.
- Poor contact of couplers.

Repair Instructions

Battery Current Leakage Inspection

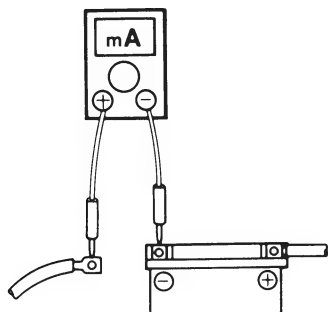
BENH23K21A06001

- 1) Disconnect the battery (–) lead wire. Refer to “Battery Removal and Installation” (Page 1J-11).
- 2) Measure the current between battery (–) terminal and the battery (–) lead wire using the multi circuit tester. If the reading exceeds the specified value, leakage is evident.

NOTICE

- In case of a large current leak, turn the tester to high range first to avoid tester damage.
- Do not turn the ignition switch to ON position when measuring current.

Battery leakage current
[Standard]: 3 mA or less



I649G11A0002-02

- 3) Connect the battery (–) terminal and close the seat. (Page 1J-11)

Regulated Voltage Inspection

BENH23K21A06002

- 1) Open the seat.
- 2) Start the engine and keep it running at 5000 r/min with the dimmer switch turned HI position.
- 3) Measure the DC voltage between the battery (+) and (–) terminals using the multi circuit tester. If the voltage is not within the specified value, inspect the generator. (Page 1J-4)
If the generator is in good condition, replace the regulator and recheck the regulated voltage.

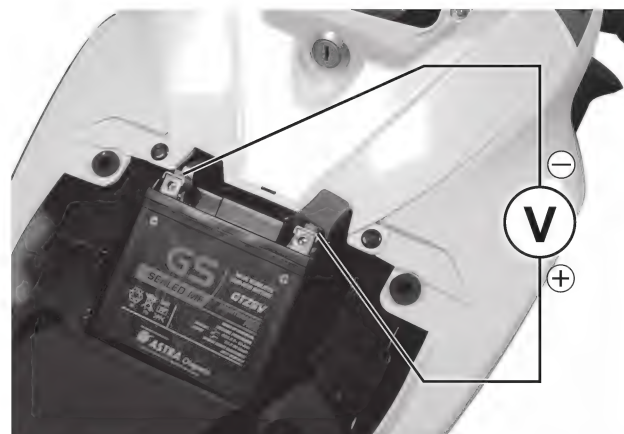
NOTE

When making this test, be sure that the battery is in fully charged condition.

Regulated voltage

Charging output

At 5000 r/min [Standard]: 13.5 – 15.2 V



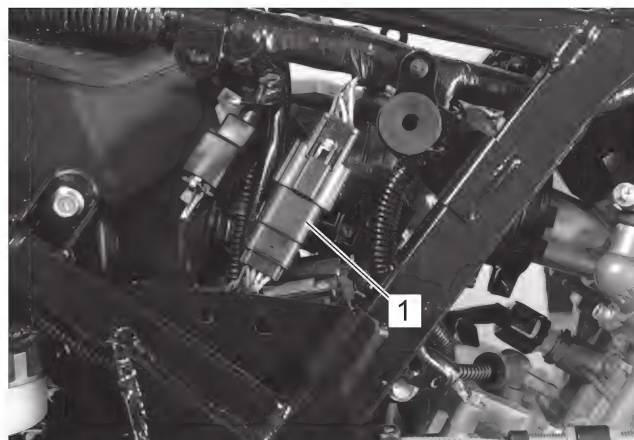
IH23K11A0004-01

Generator Inspection

BENH23K21A06003

Generator Coil Resistance

- 1) Remove front fairing. (Page 9D-22)
- 2) Disconnect the generator lead wire coupler (1).

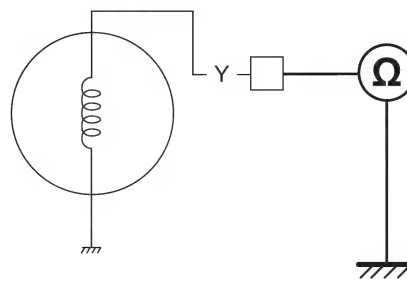


IH23K11A0005-02

- 3) Measure the resistance of generator coil.
If the resistance is out of specified value, replace generator stator with a new one. Also, check that the generator core is insulated properly.

Generator coil resistance

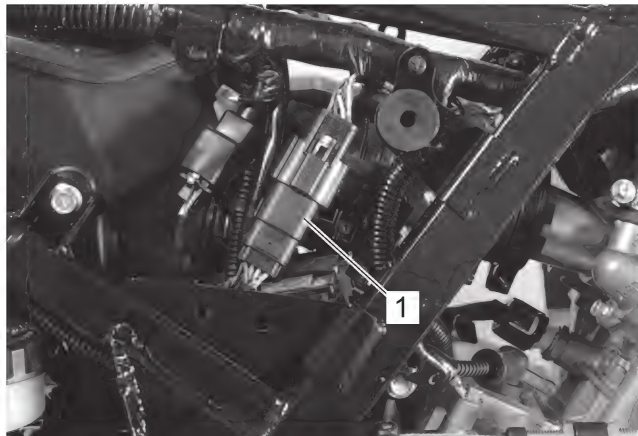
[Standard]: Approx. 0.6 Ω



IG12K11A0004-01

No-load Performance

- 1) Remove the right under cowling. (Page 9D-22)
- 2) Disconnect the generator lead wire coupler (1).



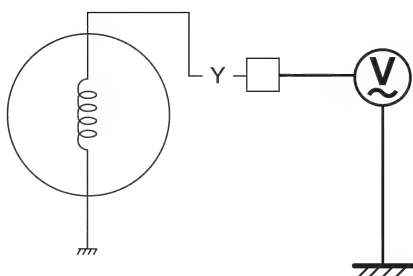
IH23K11A0005-02

- 3) Start the engine and keep it running at 5000 r/min.
- 4) Using multi circuit tester, measure the voltage of the generator coil.
If tester reads under the specified value, replace generator stator with a new one.

Generator no-load voltage

When engine cold

At 5000 r/min [Standard]: 100 V (AC) or more

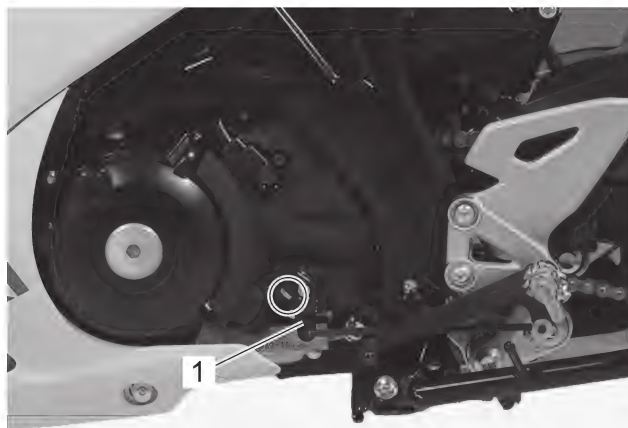


IG12K11A0005-01

Generator Removal

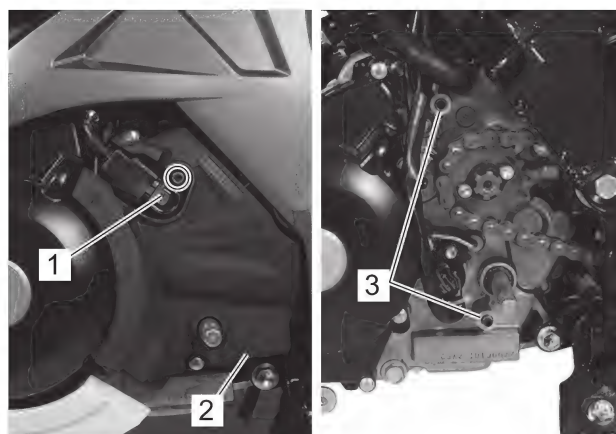
BENH23K21A06004

- 1) Disconnect the battery (-) lead wire. Refer to "Battery Removal and Installation" (Page 1J-11).
- 2) Drain engine oil. (Page 1E-5)
- 3) Remove the left under cowling. (Page 9D-22)
- 4) Remove the gearshift lever (1) and left footrest (2).



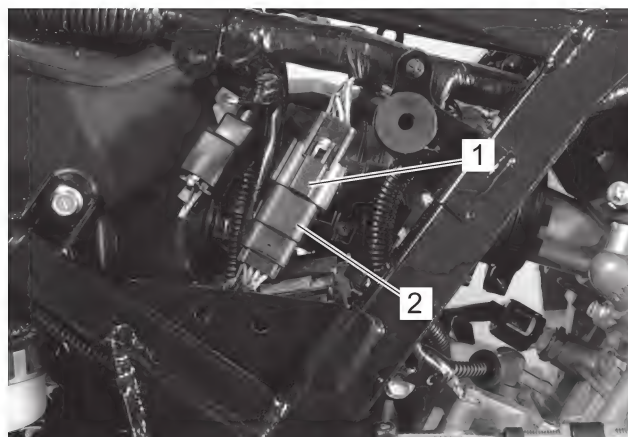
IH23K11A0006-01

- 5) Remove speed sensor (1) from engine sprocket cover.
- 6) Remove engine sprocket cover (2) and dowel pins (3).



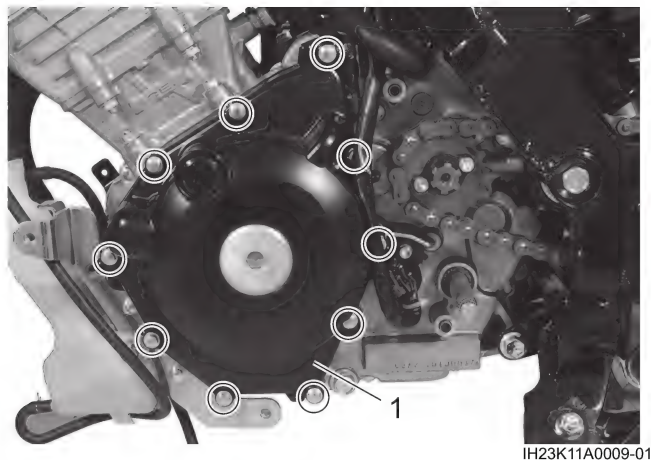
IH23K11A0007-01

- 7) Disconnect CKP sensor lead wire coupler (1) and generator lead wire coupler (2).

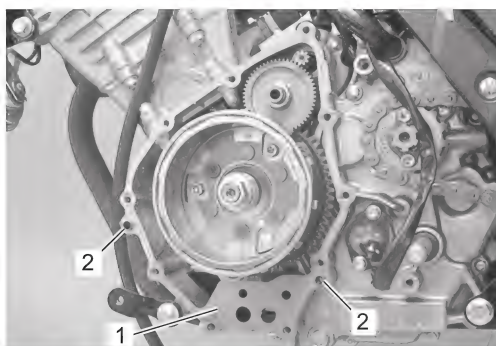


IH23K11A0008-02

8) Remove the generator cover (1).

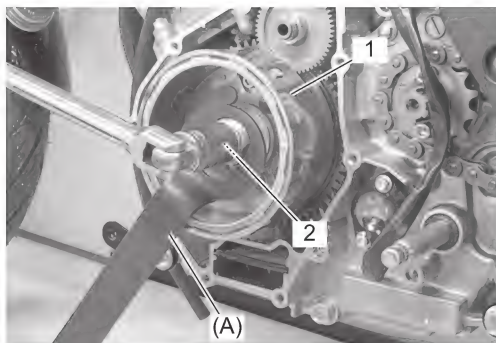


9) Remove the gasket (1) and dowel pins (2).



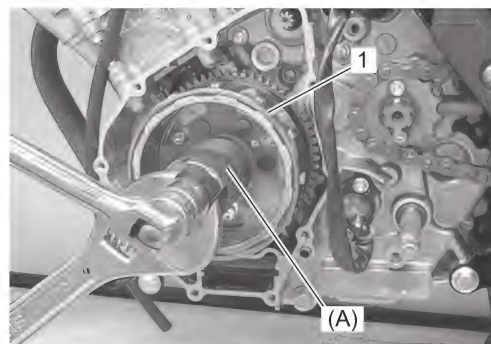
10) Hold the generator rotor (1) with the special tool and remove the generator rotor nut (2).

Special tool
(A): 09930-44521

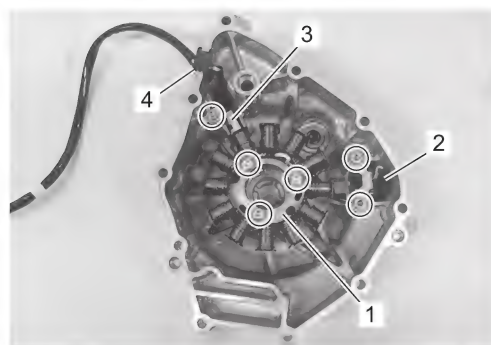


11) Remove the generator rotor (1) with the special tool.

Special tool
(A): 09930-34932



12) Remove the generator stator (1), CKP sensor (2), lead wire clamp (3) and grommet (4).



Generator Installation

BENH23K21A06005

- 1) Install the generator stator (1), lead wire clamp (2) and CKP sensor (3), and tighten the bolts to the specified torque.

NOTE

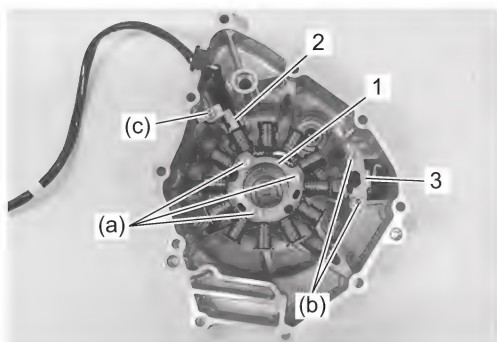
Pass the generator lead wire (4) between the generator cover ribs (5) and lead wire clamp. Be careful not to pinch the wire.

Tightening torque

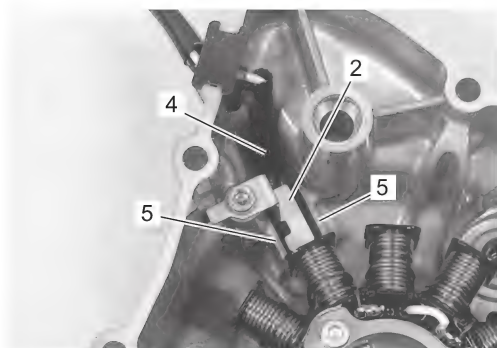
Generator stator bolt (a): 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft)

CKP sensor bolt (b): 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft)

Lead wire clamp bolt (c): 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft)



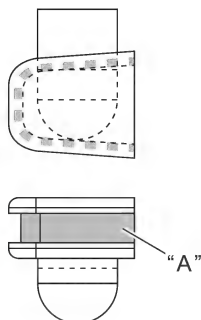
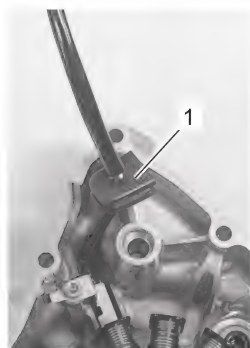
IG12K11A0014-01



IG12K11A0015-01

- 2) Apply sealant to the grommet (1) as shown and install it to the generator cover.

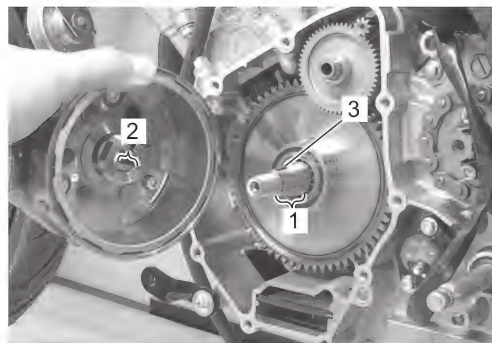
“A”: Sealant 99000-31140 (SUZUKI BOND 1207B)



IG12K11A0016-01

- 3) Degrease the tapered portion (1) of crankshaft and also the generator rotor (2). Use nonflammable cleaning solvent to wipe off oily or greasy matter and make these surfaces completely dry.

- 4) Align the key (3) and key slot on the generator rotor.



IG12K11A0017-01

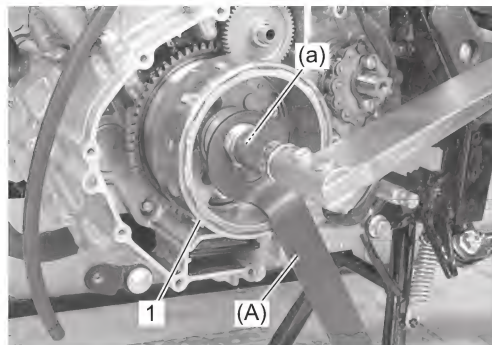
- 5) Install the generator rotor (1) on the crankshaft.
- 6) Hold the generator rotor with the special tool and tighten its nut to the specified torque.

Special tool

(A): 09930-44521

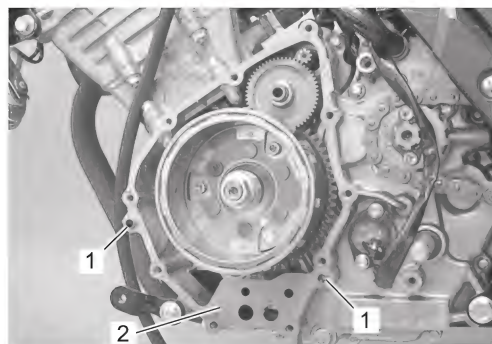
Tightening torque

Generator rotor nut (a): 140 N·m (14.3 kgf-m, 103.5 lbf-ft)



IG12K11A0018-01

- 7) Install the dowel pins (1) and new gasket (2).



IG12K11A0019-01

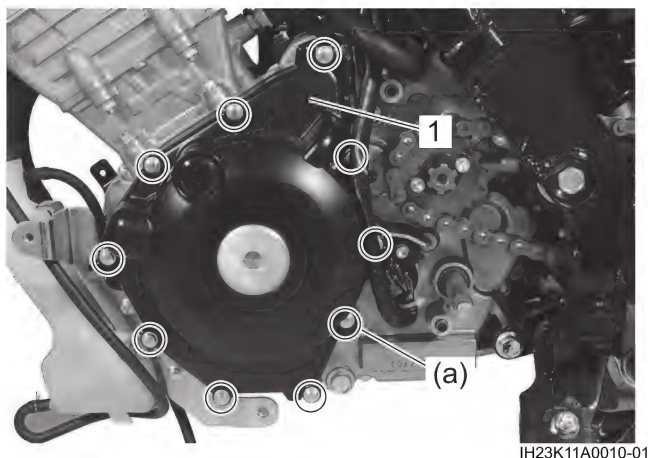
- 8) Install the generator cover (1) and tighten the bolts to the specified torque.

⚠ CAUTION

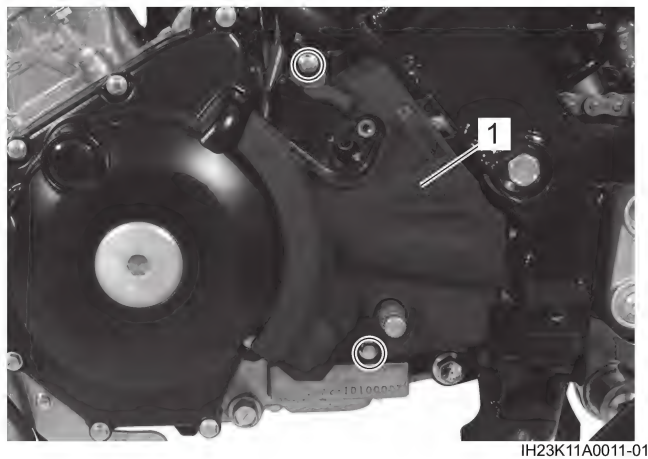
Be careful not to pinch the finger between the generator cover and the crankcase.

Tightening torque

Generator cover bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

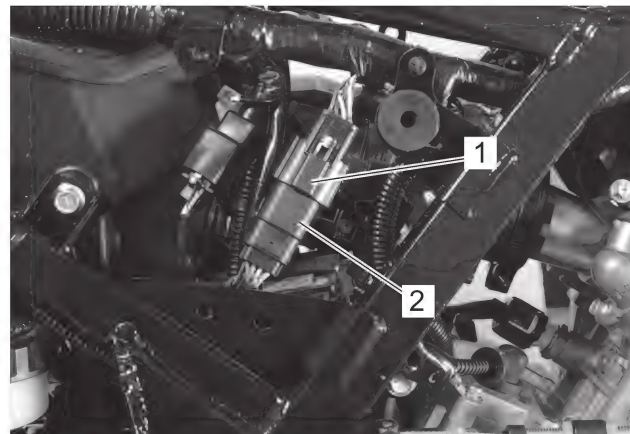


- 9) Route the GP switch lead wire. (Page 9A-7)
- 10) Install the dowel pins and engine sprocket cover (1), and then tighten its bolts to the specified torque. Refer to "Engine Sprocket Removal and Installation" in Section 3A (Page 3A-4).



- 11) Install the speed sensor. (Page 1C-11)

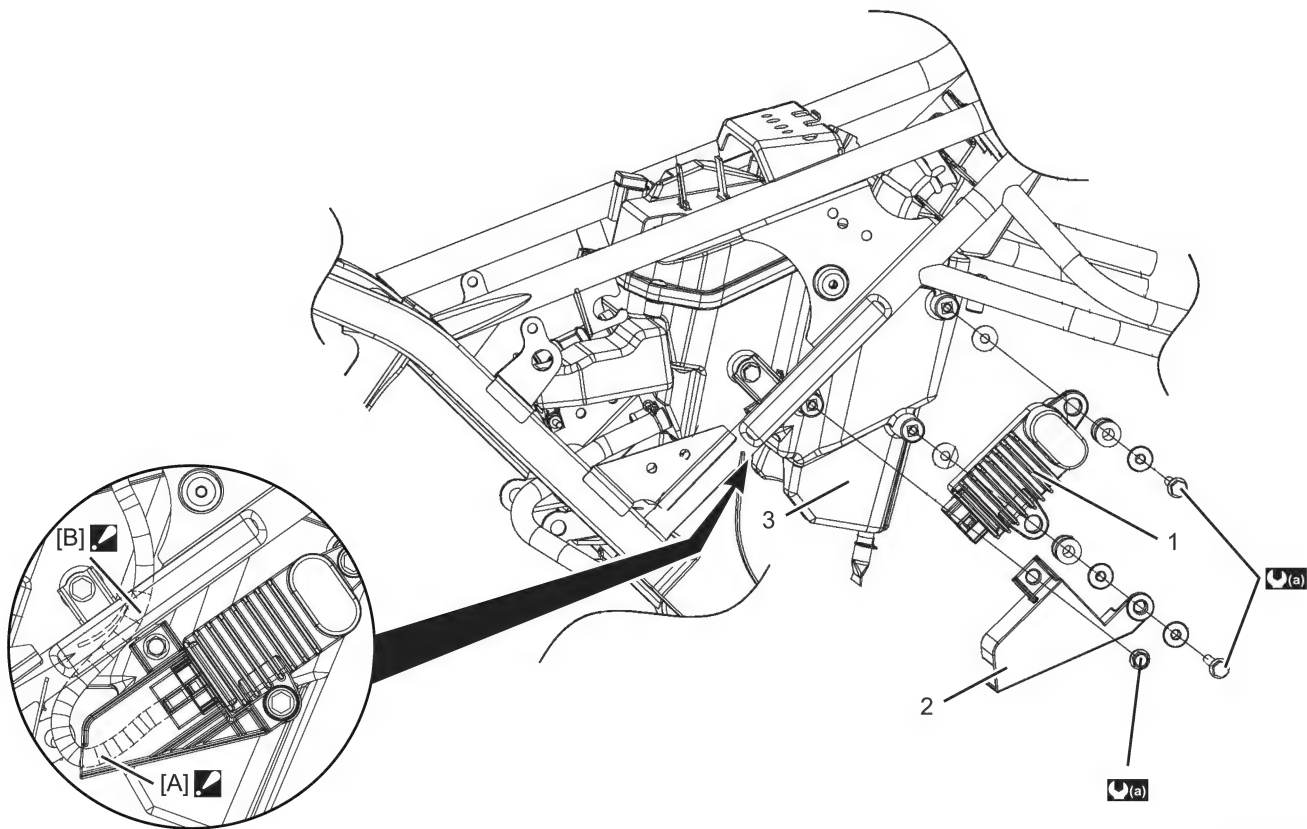
- 12) Connect the generator lead wire coupler (1) and CKP sensor lead wire coupler (2).



- 13) Clamp the generator lead wire and CKP sensor lead wire. (Page 9A-7)
- 14) Connect the battery (-) lead wire. (Page 1J-11)
- 15) Pour engine oil. (Page 1E-5)
- 16) Install the removed parts.

Regulator / Rectifier Construction

BENH23K21A06006



IH23K11A0017-01

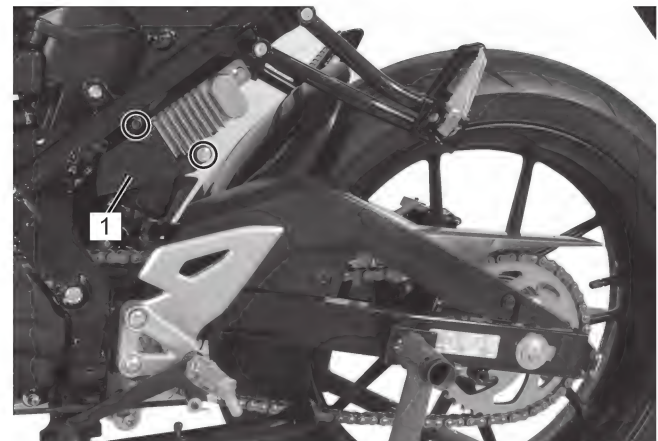
[A]: Pass harness through plate rectifier	2. Rectifier bracket
[B]: Pass harness through between air cleaner wall and frame.	3. Air cleaner assembly
1. Regulator/rectifier	(a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Regulator / Rectifier Removal and Installation

BENH23K21A06007

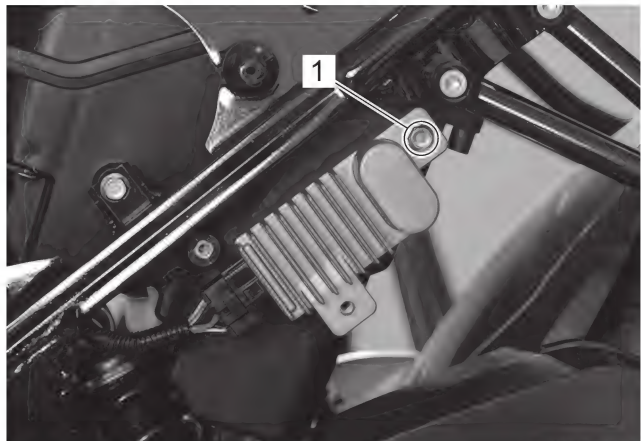
Removal

- 1) Disconnect battery (–) lead wire. Refer to “Battery Removal and Installation” (Page 1J-11).
- 2) Remove frame cover. Refer to (Page 9D-30)
- 3) Remove the regulator/rectifier plate (1).



IH23K11A0018-01

- 4) Remove the regulator/rectifier bolt (1). Refer to “Regulator / Rectifier Construction” (Page 1J-9).

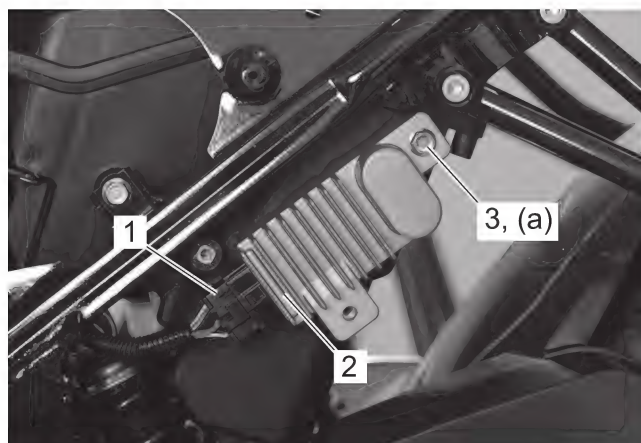


IH23K11A0016-01

NOTE

Do not depress the rear fender front too far. Otherwise, the installation position of the TO sensor may change, preventing the engine from starting.

- 5) Disconnect the regulator/rectifier coupler (1) and remove the regulator/rectifier (2).



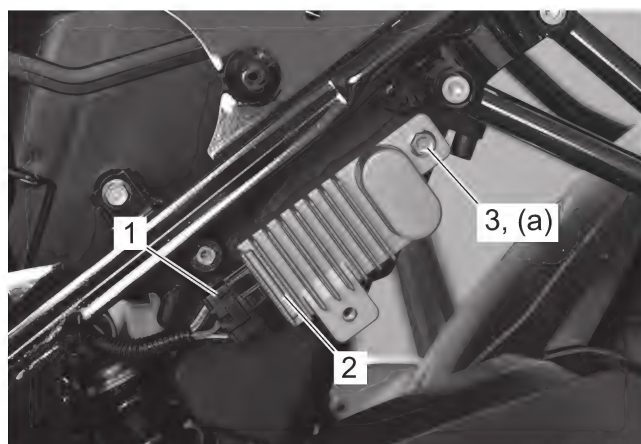
IH23K11A0013-02

Installation

- 1) Connect the regulator/rectifier coupler (1), and then install the regulator/rectifier (2) using the bolt and nut.
- 2) Tighten the regulator/rectifier bolt (3) to the specified torque.

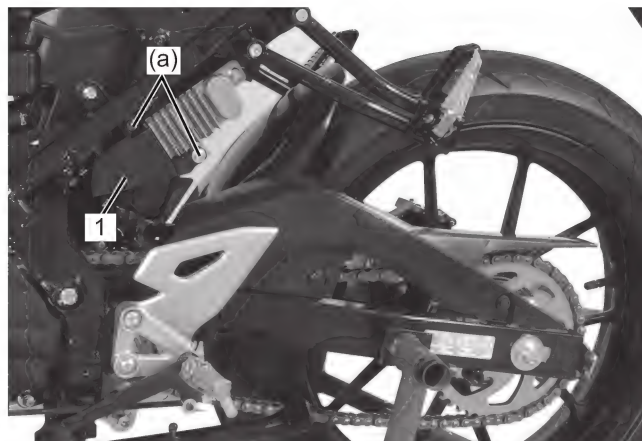
Tightening torque

Regulator/rectifier bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IH23K11A0013-02

- 3) Install the regulator/rectifier plate (1).



IH23K11A0019-01

Tightening torque

Regulator/rectifier plate bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

- 4) Install the removed parts.

Battery Charging

BENH23K21A06008

Initial Charging

For initial charging, use the charger specially designed for MF battery.

NOTICE

- For charging the battery, make sure to use the charger specially designed for MF battery. Otherwise, the battery may be overcharged resulting in shortened service life.
- Do not remove the cap during charging.
- Position the battery with the cap facing upward during charging.

Battery Recharging

NOTICE

Do not remove the caps on the battery top while recharging.

NOTE

When the motorcycle is not used for a long period, check the battery every 1 month to prevent the battery discharge.

- 1) Remove the battery from the motorcycle. (Page 1J-11)

1J-11 Charging System:

- 2) Measure the battery voltage using the multi circuit tester.
If the voltage reading is less than the 12 V (DC), recharge the battery with a battery charger.

NOTICE

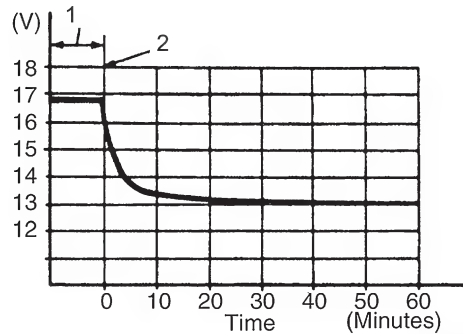
Be careful not to permit the charging current to exceed 5 A at any time.

Reaching time

Standard charging [Standard]: 0.5 A for 5 to 10 hours

Fast charging [Standard]: 5 A for 0.5 hours

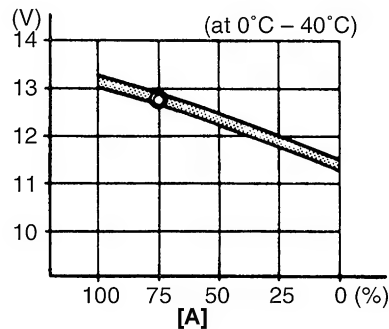
- 3) After recharging, wait at least 30 minutes and then measure the battery voltage using the multi circuit tester.
If the battery voltage is less than 12.5 V, recharge the battery again.
If the battery voltage is still less than 12.5 V after recharging, replace the battery with a new one.



ID26J11A0039-02

1. Charging period 2. Stop charging

- 4) Install the battery to the motorcycle. (Page 1J-11)



IF34J11A0032-01

[A]: Battery charged condition

Battery Removal and Installation

BENH23K21A06009

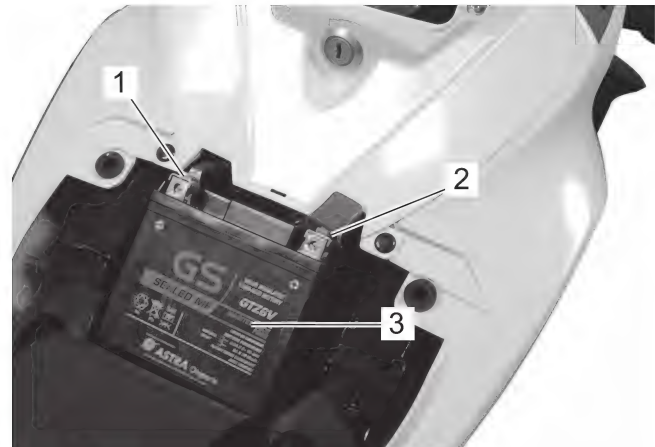
Removal

- 1) Open the seat. (Page 9D-20)
- 2) Disconnect the battery (-) lead wire (1).
- 3) Disconnect the battery (+) lead wire (2).

NOTE

Disconnect the battery (-) lead wire (1) first, then disconnect the battery (+) lead wire (2).

- 4) Remove the battery band (3) and battery (4) from the motorcycle.



IH23K11A0015-02

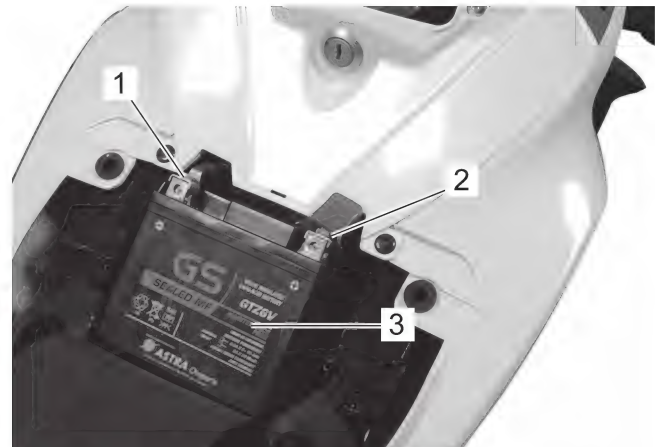
Installation

Install the battery in the reverse order of removal. Pay attention to the following points:

NOTICE

Never use anything except the specified battery.

- Connect the battery (+) lead wire (1) first, then connect battery (-) lead wire (2).
- Tighten the battery lead wire mounting bolts securely.



IH23K11A0015-02

Battery Visual Inspection

BENH23K21A06010

- 1) Open the seat.
- 2) Visually inspect the surface of the battery container.
If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one. (Page 1J-11)
If the battery terminals are found to be coated with rust or an acidic white powdery substance, clean the battery terminals with sandpaper.
- 3) Close the seat.

Specifications

Tightening Torque Specifications

BENH23K21A07001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Generator stator bolt	5.0	0.51	3.70	(Page 1J-7)
CKP sensor bolt	5.0	0.51	3.70	(Page 1J-7)
Lead wire clamp bolt	5.0	0.51	3.70	(Page 1J-7)
Generator rotor nut	140	14.3	103.5	(Page 1J-7)
Generator cover bolt	10	1.0	7.5	(Page 1J-8)
Regulator/rectifier bolt	10	1.0	7.5	(Page 1J-10)
Regulator/rectifier plate bolt	10	1.0	7.5	(Page 1J-10)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Regulator / Rectifier Construction” (Page 1J-9)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

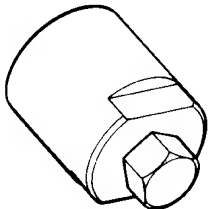

Recommended Service Material

BENH23K21A08001

Material	SUZUKI recommended product or Specification		Note
Sealant	SUZUKI BOND 1207B	P/No.: 99000-31140	(Page 1J-7)

Special Tool

BENH23K21A08002

09930-34932 Rotor remover (Page 1J-6)		09930-44521 Rotor holder (Page 1J-6) / (Page 1J-7)	
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Exhaust System

Precautions

Precautions for Exhaust System

BENH23K21B00001

⚠ WARNING

To avoid the risk of being burned, do not touch the exhaust system when the system is hot.

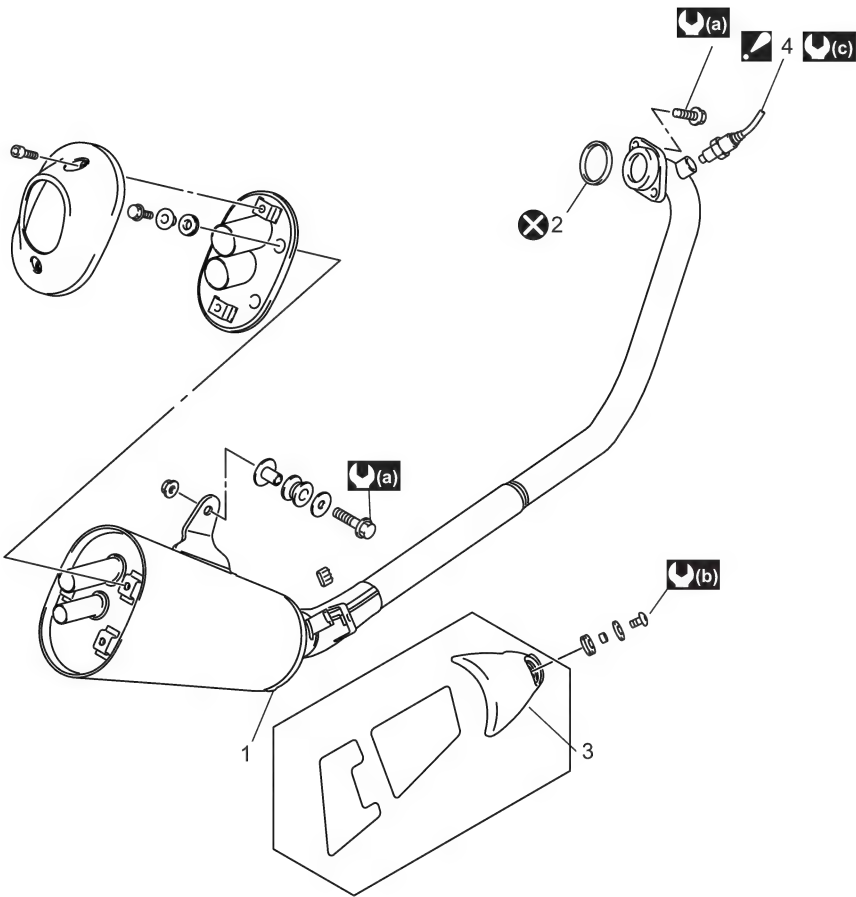
NOTICE

After installation of the muffler, make sure that there is no leakage of exhaust gas.

Repair Instructions

Exhaust System Components

BENH23K21B06001



IH23K11B0012-02

1. Muffler	4. O2 sensor : Apply nickel based anti seize to the thread part of O2 sensor.	(c) : 25 N·m (2.5 kgf·m, 18.5 lbf·ft)
2. Gasket	(a) : 23 N·m (2.3 kgf·m, 17.0 lbf·ft)	: Do not reuse.
3. Muffler cover	(b) : 10 N·m (1.0 kgf·m, 7.5 lbf·ft)	

Muffler Removal and Installation

BENH23K21B06002

Removal

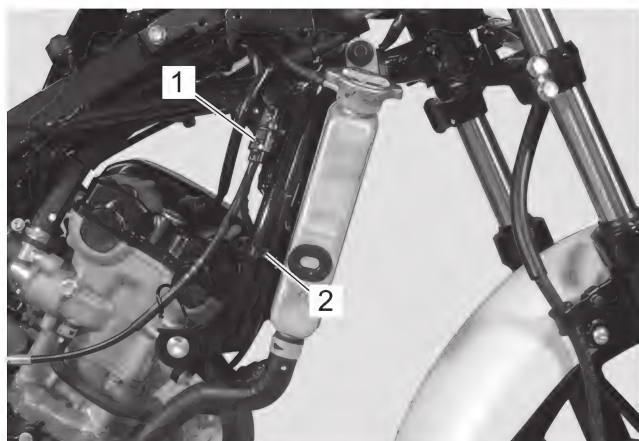
1) GSX R 150 Model

Remove right front fairing. (Page 9D-22)

GSX S 150 Model

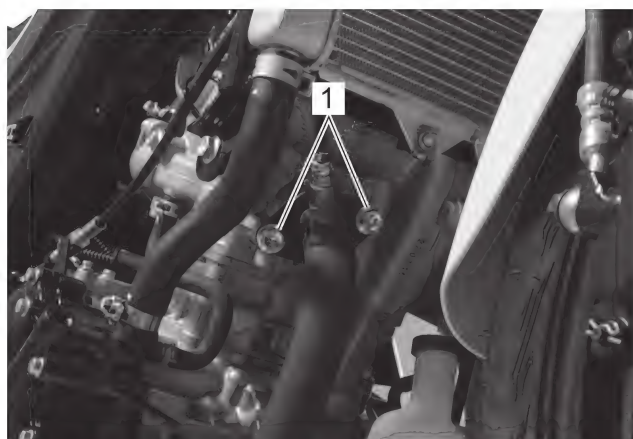
- a) Remove under cowl assembly. "Under Cowling Removal and Installation" in Section 9D (Page 9D-25)
- b) Remove fuel tank side cover. "Fuel Tank Side Cover Assembly Removal and Installation" in Section 9D (Page 9D-23)

- 2) Disconnect the O2 sensor lead wire coupler (1) and remove the O2 sensor lead wire clamp (2).



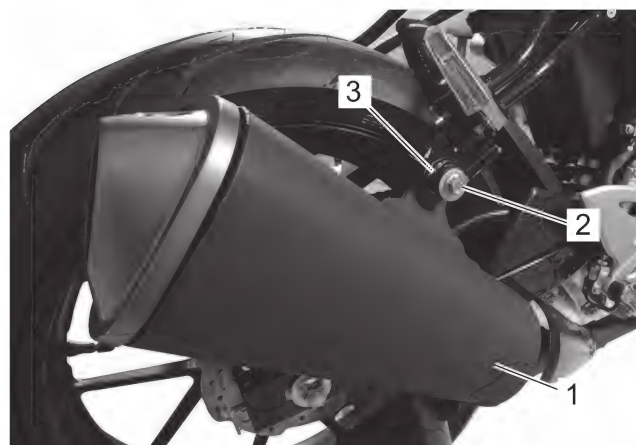
IH23K11B0001-01

- 3) Remove the exhaust pipe bolts (1).



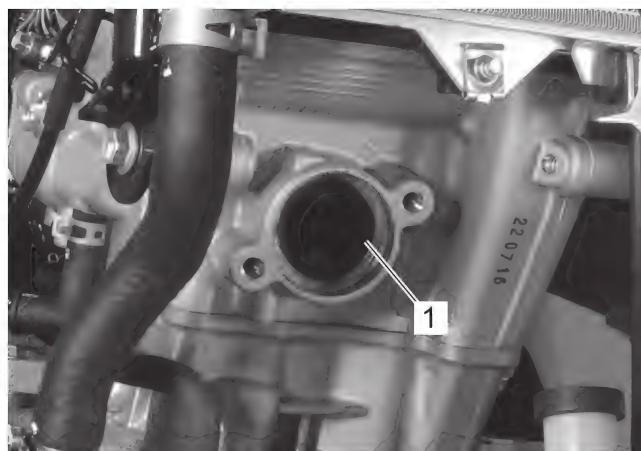
IH23K11B0002-01

- 4) Remove the muffler (1) by removing muffler mounting bolt (2) and nut (3).



IH23K11B0003-01

- 5) Remove the exhaust pipe gasket (1).



IH23K11B0004-02

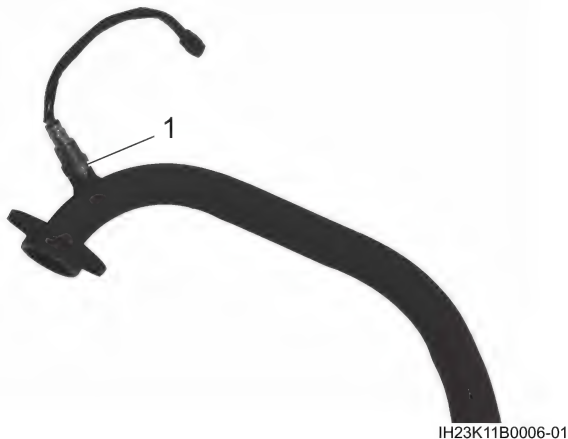
- 6) Remove the muffler cover (1).



IH23K11B0005-01

1K-3 Exhaust System:

- 7) Remove the O2 sensor (1), if necessary.



Installation

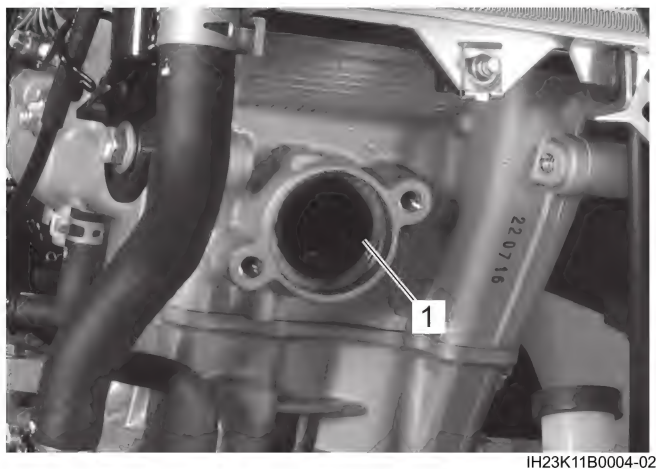
- 1) Install the muffler cover (1) and tighten the bolt to the specified torque.

Tightening torque

Muffler cover bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



- 2) Install a new exhaust pipe gasket (1).



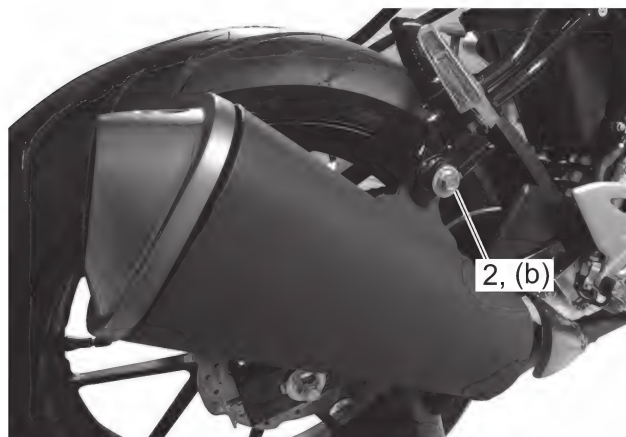
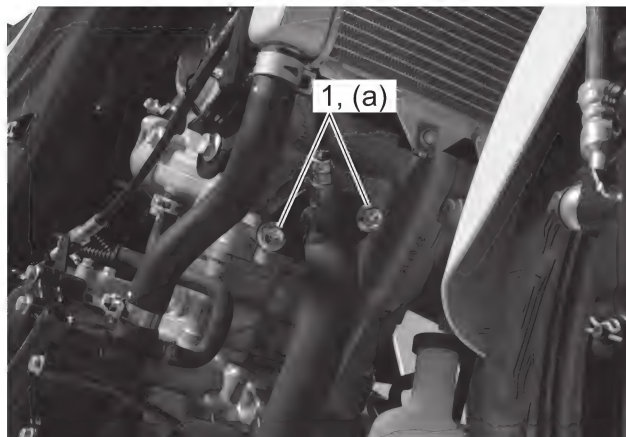
- 3) Install the muffler.

- 4) Tighten the exhaust pipe bolts (1) first, and then tighten the muffler mounting bolt (2) to the specified torque.

Tightening torque

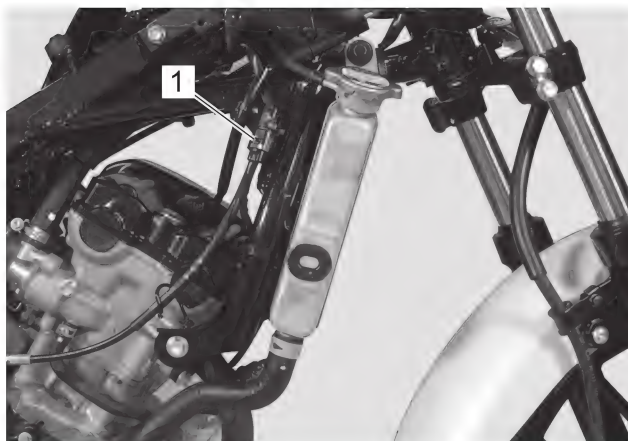
Exhaust pipe bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

Muffler mounting bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



- 5) Install the O2 sensor, if necessary. (Page 1C-8)

- 6) Connect the O2 sensor lead wire coupler (1) and clamp the O2 sensor lead wire. (Page 9A-7)



7) GSX R 150 Model

Install the right front fairing. (Page 9D-25)

GSX S 150 Model

Install the under cowling assembly. (Page 9D-25)

Exhaust System Inspection

BENH23K21B06003

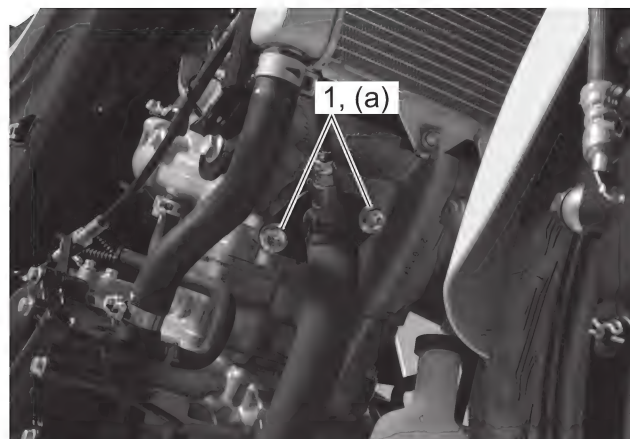
Inspect the muffler connection for exhaust gas leakage and mounting condition. If any defect is found, replace the muffler with a new one.

Check the exhaust pipe bolts (1) and muffler mounting bolt (2) are tightened to their specified torque.

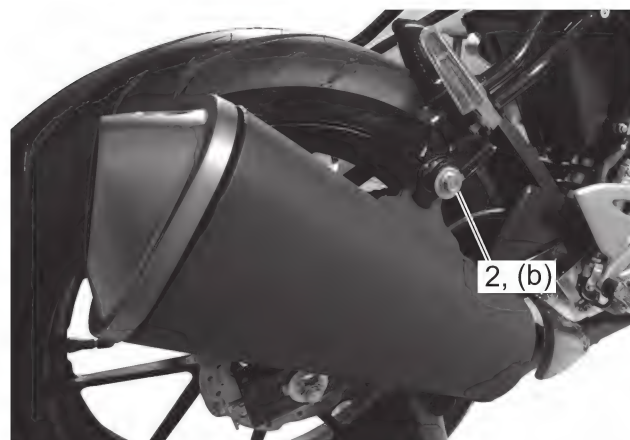
Tightening torque

Exhaust pipe bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

Muffler mounting bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K11B0008-02



IH23K11B0009-02

Specifications**Tightening Torque Specifications**

BENH23K21B07001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Muffler cover bolt	10	1.0	7.5	(Page 1K-3)
Exhaust pipe bolt	23	2.3	17.0	(Page 1K-3) / (Page 1K-4)
Muffler mounting bolt	23	2.3	17.0	(Page 1K-3) / (Page 1K-4)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Exhaust System Components” (Page 1K-1)

“Fasteners Information” in Section 0C (Page 0C-9)

Section 2

Suspension

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		Special Tool	2D-14

Precautions

Precautions

Precautions for Suspension

BENH23K22000001

Refer to "General Precautions" in Section 00 (Page 00-1).

⚠ WARNING

- Never attempt to heat, quench or straighten any suspension part. If any damage or deformation is found, replace the part with a new one without correct it.
 - When removing or installing the suspension or wheel, place the motorcycle on a level surface and support it securely with a hoist or jack etc.
 - Do not support the motorcycle with the muffler.
-

Suspension General Diagnosis

Diagnostic Information and Procedures

Suspension and Wheel Symptom Diagnosis

BENH23K22104001

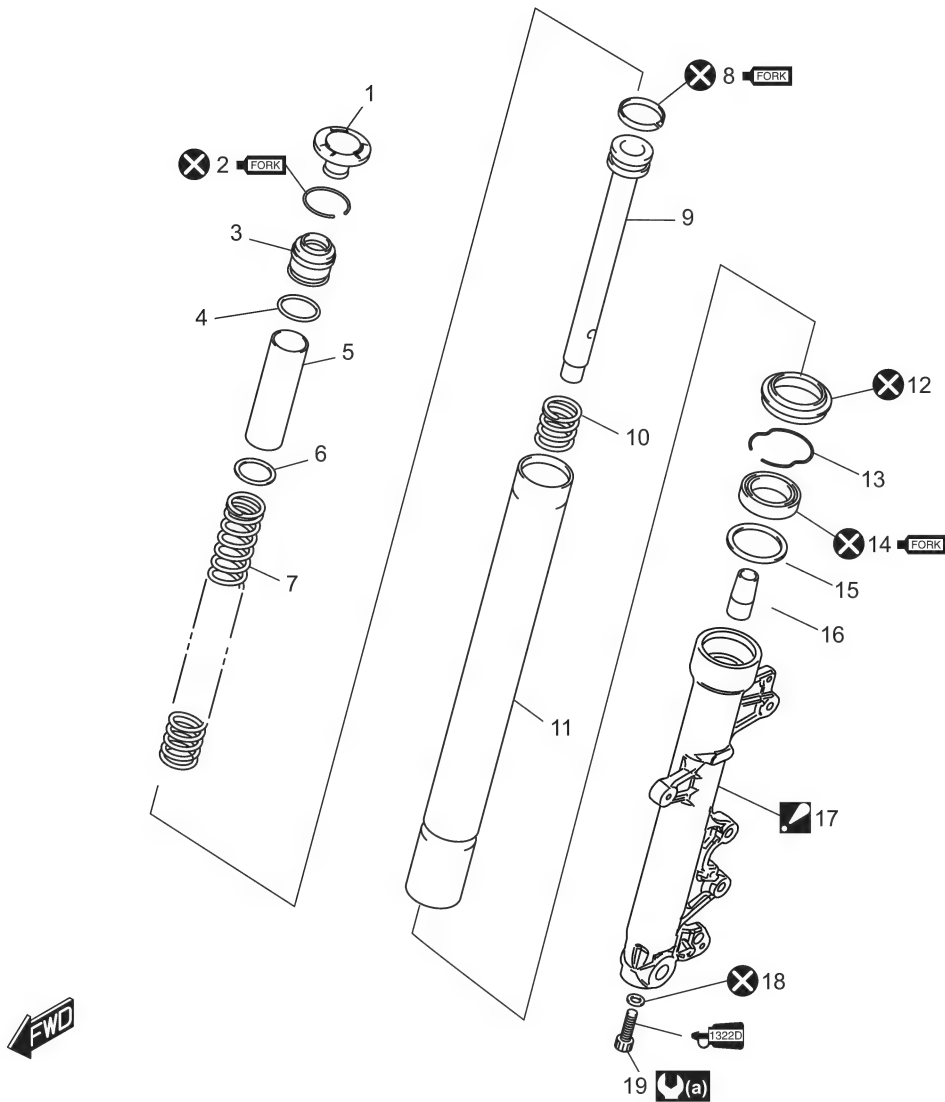
Condition	Possible cause	Correction / Reference Item
Wobbly front wheel	Distorted wheel rim.	Replace. ⌚(Page 2D-11)
	Worn front wheel bearings.	Replace. ⌚(Page 2D-4)
	Defective or incorrect tire.	Replace. ⌚(Page 2D-11)
	Loose front axle nut.	Tighten. ⌚(Page 2D-3)
	Incorrect fork oil level.	Adjust. ⌚(Page 2B-5)
Front suspension too soft	Insufficiently viscous fork oil.	Replace. ⌚(Page 2B-5)
	Insufficient fork oil.	Check level and add. ⌚(Page 2B-5)
	Weak spring.	Replace. ⌚(Page 2B-5)
Front suspension too stiff	Excessively viscous fork oil.	Replace. ⌚(Page 2B-5)
	Excessive fork oil.	Check level and drain. ⌚(Page 2B-5)
Front suspension too noisy	Insufficient fork oil.	Check level and add. ⌚(Page 2B-5)
	Loose front suspension fastener.	Tighten. ⌚(Page 2B-2)
Wobbly rear wheel	Distorted wheel rim.	Replace. ⌚(Page 2D-11)
	Worn rear wheel bearings.	Replace. ⌚(Page 2D-7)
	Defective or incorrect tire.	Replace. ⌚(Page 2D-11)
	Worn swingarm bushings.	Replace. ⌚(Page 2C-3)
	Loose rear suspension fastener.	Tighten. ⌚(Page 2C-2)
	Loose rear axle nut.	Tighten. ⌚(Page 2D-6)
Rear suspension too soft	Weak rear shock absorber spring.	Replace. ⌚(Page 2C-2)
	Rear shock absorber leaks oil.	Replace. ⌚(Page 2C-2)
Rear suspension too stiff	Bent rear shock absorber shaft.	Replace. ⌚(Page 2C-2)
	Worn swingarm bushings.	Replace. ⌚(Page 2C-3)
	Bent swingarm pivot shaft.	Replace. ⌚(Page 2C-3)
Rear suspension too noisy	Loose rear suspension fastener.	Tighten. ⌚(Page 2C-2)
	Worn swingarm bushings.	Replace. ⌚(Page 2C-3)

Front Suspension






Repair Instructions

Front Fork Components

BENH23K22206001



IH23K1220001-03

1. Front fork cap	7. Front spring	13. Snap ring	19. Bolt
2. Stopper ring	8. Ring	14. Oil seal	 (a) : 20 N·m (2.0 kgf-m, 15.0 lbf-ft)
3. Spring seat	9. Cylinder	15. Seal spacer	 : Apply fork oil.
4. O-ring	10. Rebound spring	16. Oil lock piece	 : Apply thread lock to the thread part.
5. Spring spacer	11. Inner tube	 17. Outer tube Apply fork oil to the inside of the outer tube.	 : Do not reuse.
6. Spring joint	12. Dust seal	18. Gasket	

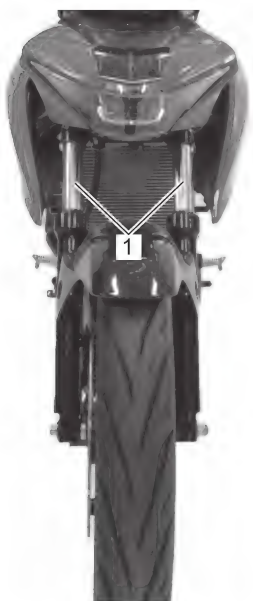
Front Fork On-Vehicle Inspection

BENH23K22206002

Inspect front forks for oil leakage, scoring or scratches on outer surface of inner tubes (1).
Replace any defective parts, if necessary. (Page 2B-5)

GSX R 150 Model

IH23K1220005-01

GSX S 150 Model

IH23K2220001-01

Front Fork Assembly Removal and Installation

BENH23K22206003

GSX R 150 Model

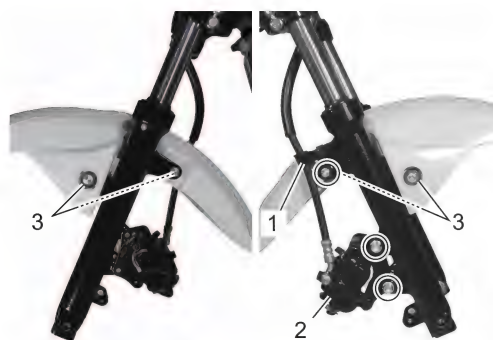
Refer to "Front Wheel Assembly Removal and Installation" in Section 2D (Page 2D-3).

NOTE

The right and left front forks are installed symmetrically (except front brake caliper) and therefore the removal procedure for one side is the same as that for the other side.

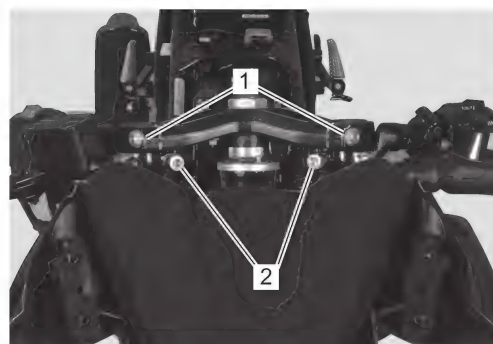
Removal

- 1) Remove brake hose clamp (1) and front brake caliper (2). (Right side only)
- 2) Remove front fender bolts (3) and front fender.



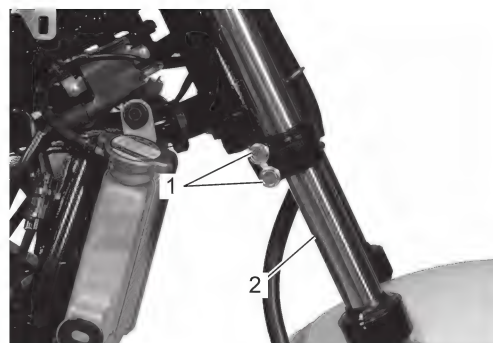
IH23K1220002-01

- 3) Loosen front fork upper clamp bolt (1) and handlebar bolt (2).



IH23K1220003-01

- 4) Loosen front fork lower clamp bolts (1), and then remove front fork (2) by supporting it.

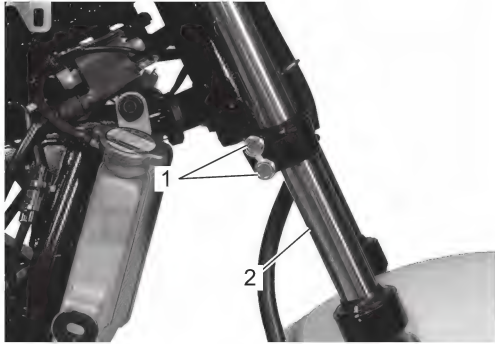


IH23K1220004-02

2B-3 Front Suspension:

Installation

- 1) Set front fork (1) to steering stem lower bracket temporarily by tightening lower clamp bolts (2).

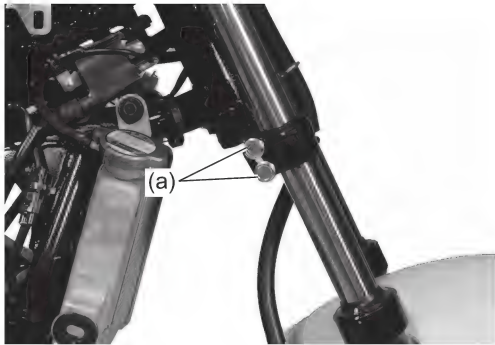


IH23K1220004-02

- 2) Loosen the lower clamp bolts.
- 3) Tighten the front fork lower clamp bolts to specified torque.

Tightening torque

Front fork lower clamp bolts (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



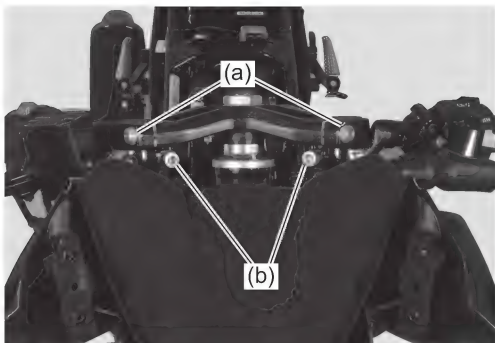
IH23K1220006-01

- 4) Tighten front fork upper clamp bolt and handlebar bolt.

Tightening torque



Front fork upper clamp bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

Handlebar bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K1220007-01

- 5) Install front brake caliper (1) and brake hose clamp (2).

- Front brake caliper:  (Page 4B-3)
- Brake hose clamp:  (Page 4A-1)



IH23K1220008-01

GSX S 150 Model

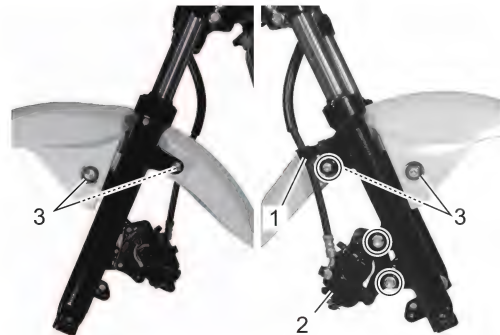
Refer to "Front Wheel Assembly Removal and Installation" in Section 2D (Page 2D-3).

NOTE

The right and left front forks are installed symmetrically (except front brake caliper) and therefore the removal procedure for one side is the same as that for the other side.

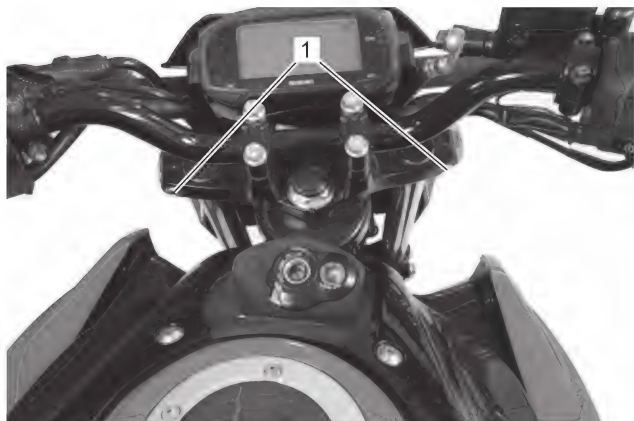
Removal

- 1) Remove brake hose clamp (1) and front brake caliper (2). (Right side only)
- 2) Remove front fender bolts (3) and front fender.



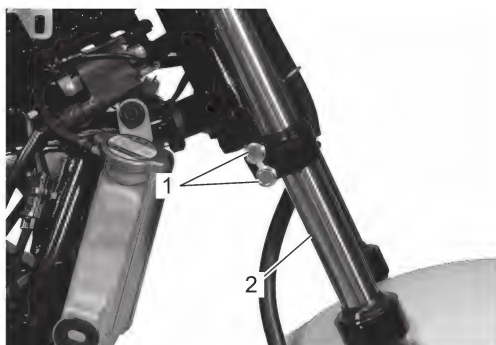
IH23K1220002-01

- 3) Loosen front fork upper clamp bolt (1).



IH23K2220002-01

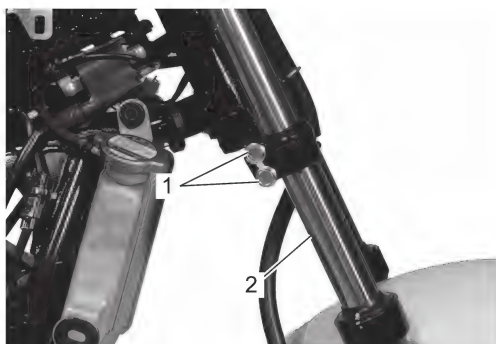
- 4) Loosen front fork lower clamp bolts (1), and then remove front fork (2) by supporting it.



IH23K1220004-02

Installation

- 1) Set front fork (1) to steering stem lower bracket temporarily by tightening lower clamp bolts (2).



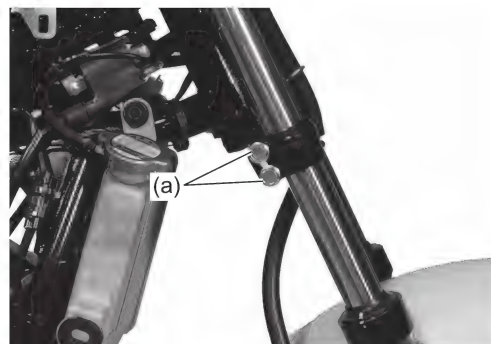
IH23K1220004-02

- 2) Loosen the lower clamp bolts.

- 3) Tighten the front fork lower clamp bolts to specified torque.

Tightening torque

Front fork lower clamp bolts (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

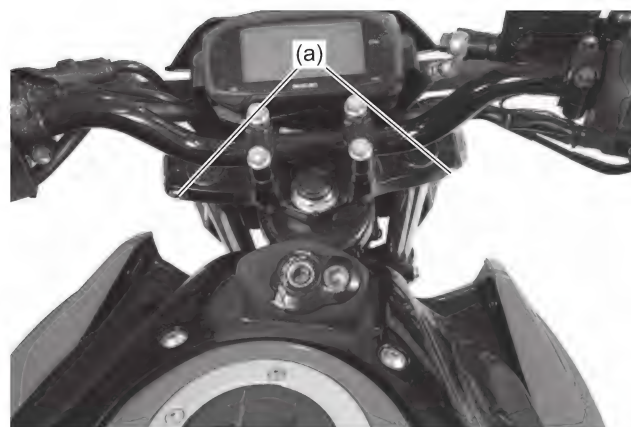


IH23K1220006-01

- 4) Tighten front fork upper clamp bolt.

Tightening torque

Front fork upper clamp bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K2220003-01

- 5) Install front brake caliper (1) and brake hose clamp (2).

- Front brake caliper: ☞ (Page 4B-3)
- Brake hose clamp: ☞ (Page 4A-1)



IH23K1220008-01

2B-5 Front Suspension:

Front Fork Disassembly and Reassembly

BENH23K22206004

Refer to "Front Fork Assembly Removal and Installation" (Page 2B-2).

NOTE

The right and left front forks are installed symmetrically and therefore the disassembly procedure for one side is the same as that for the other side.

Disassembly

- 1) Remove front fork cap bolt (1).

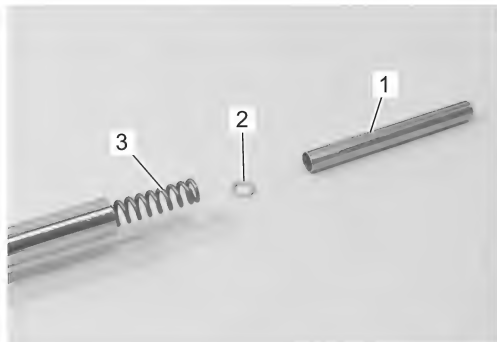
NOTICE

Hold front fork cap bolt by hand when removing the bolt. The cap bolt may pop up pushed by the spring.



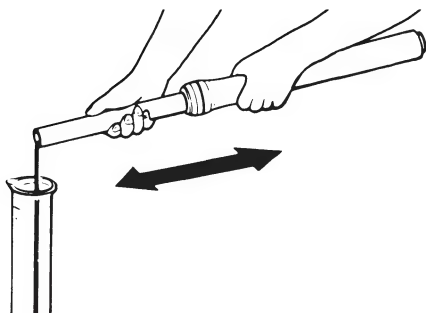
IH23K1220009-01

- 2) Remove spacer (1), washer (2) and spring (3).



IG12K1220011-01

- 3) Invert the fork and stroke it several times to drain out fork oil.
- 4) Hold the fork inverted for a few minutes to drain oil.



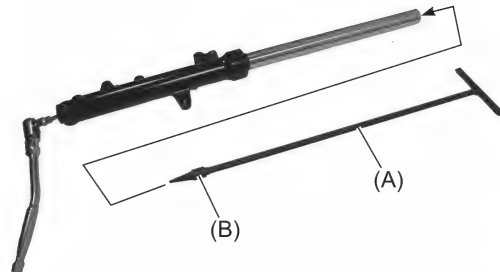
I649G1220012-02

- 5) Remove cylinder bolt using special tools.

Special tool

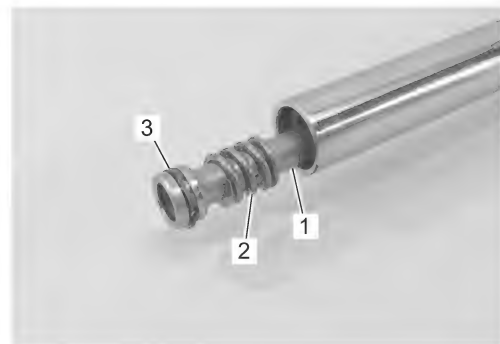
(A): 09940-34520

(B): 09940-34561



IH23K1220011-02

- 6) Remove cylinder (1) and rebound spring (2), and then remove piston ring (3).



IG12K1220013-01

- 7) Remove inner tube (1).



IH23K1220010-01

- 8) Remove dust seal (1).

- 9) Remove oil seal stopper ring (2).



IH23K1220012-01

10) Remove oil seal (1) using special tool.

Special tool
(A): 09913-50121



IH23K1220013-01

11) Remove all oil seal component.



IH23K1220014-02

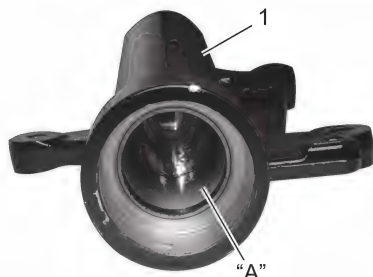
Reassembly

NOTICE

- Thoroughly wash all component parts being assembled. Insufficient washing can result in oil leakage or premature wear of parts.
- When reassembling front fork, use new fork oil.
- Use specified fork oil for front fork.

1) Apply fork oil to the inside of outer tube (1).

"A": Fork oil 99000-99001-SS8 (SUZUKI FORK OIL SS-8)



IH23K1220015-01

2) Install inner tube (1) into the outer tube.



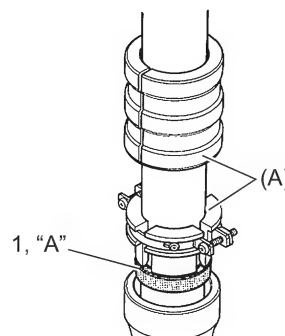
IH23K1220016-01

3) Apply fork oil to oil seal lip.

"A": Fork oil 99000-99001-SS8 (SUZUKI FORK OIL SS-8)

4) Install a new oil seal (1) into the outer tube using special tool.

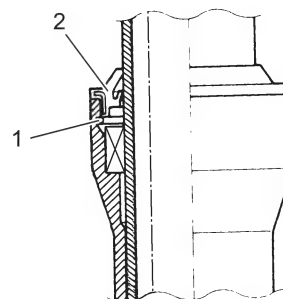
Special tool
(A): 09940-52861



IG12K1220031-01

5) When installing the oil seal stopper ring (1), make sure that the oil seal stopper ring is fitted securely into the groove.

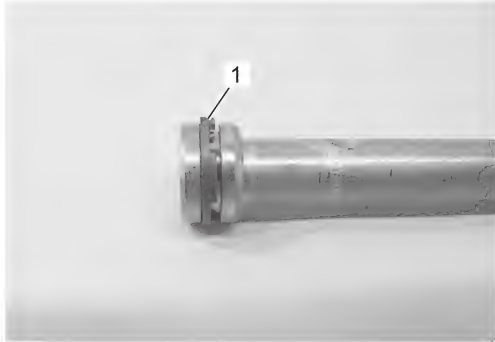
6) Install a new dust seal (2).



IF34J1220020-01

2B-7 Front Suspension:

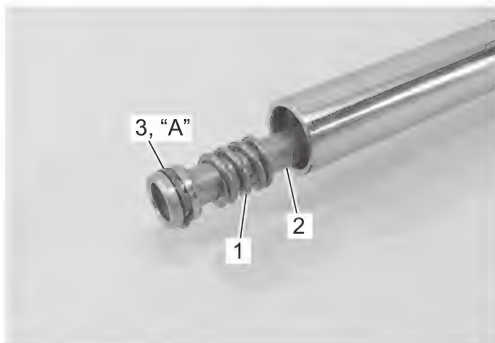
- 7) Install piston ring (1) to the cylinder.



IG12K1220021-01

- 8) Install rebound spring (1) to the cylinder (2).
9) Apply fork oil to piston ring (3) and insert cylinder into the inner tube.

“A”: Fork oil 99000–99001–SS8 (SUZUKI FORK OIL SS-8)



IG12K1220022-02

- 10) Install a new cylinder bolt gasket (1).
11) Apply thread lock to cylinder bolt (2), and tighten it to specified torque using hexagon wrench and special tools.

NOTE

Check the front fork for smoothness by stroking it after installing the cylinder.

Special tool

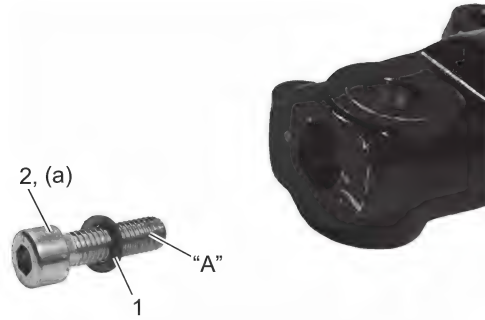
(A): 09940–34520

(B): 09940–34561

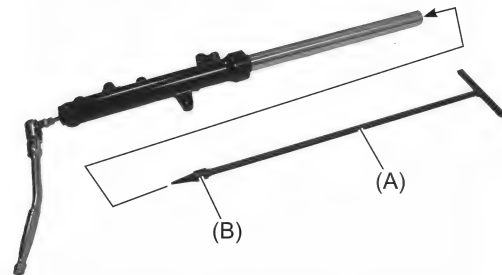
“A”: Thread lock cement 99000–32150 (THREAD LOCK CEMENT 1322D)

Tightening torque

Front fork cylinder bolt (a): 20 N·m (2.0 kgf-m, 15.0 lbf-ft)



IH23K1220017-01



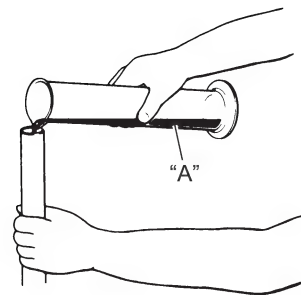
IH23K1220011-02

- 12) Place front fork vertically without spring.
13) Compress it fully.
14) Pour specified front fork oil to inner tube.

“A”: Fork oil 99000–99001–SS8 (SUZUKI FORK OIL SS-8)

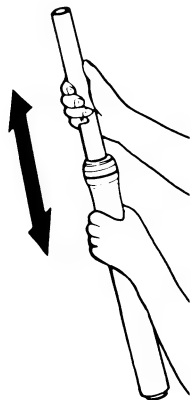
Front fork oil capacity

Each leg [Standard]: 196 ml (6.62 US oz, 6.89 Imp oz)



ID26J1220030-01

- 15) Move the inner tube up and down several strokes until bubbles do not come out from the oil.
- 16) Keep front fork vertically and wait 5 – 6 minutes.



I717H1220029-01

- 17) Hold front fork vertically and adjust fork oil level "a" with special tool.

NOTE

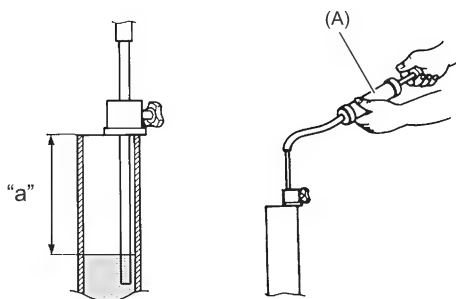
When adjusting fork oil level, remove fork spring and compress inner tube fully.

Special tool

(A): 09943-74111

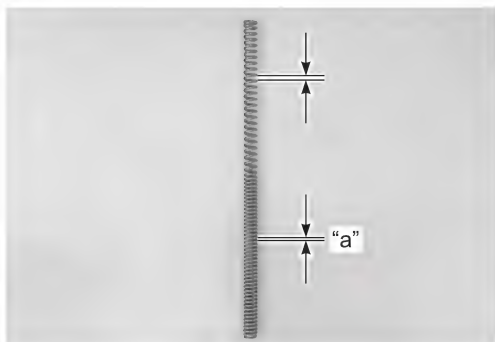
Fork oil level

Without spring, inner tube fully compressed
[Standard]: 122 mm (5.91 in)

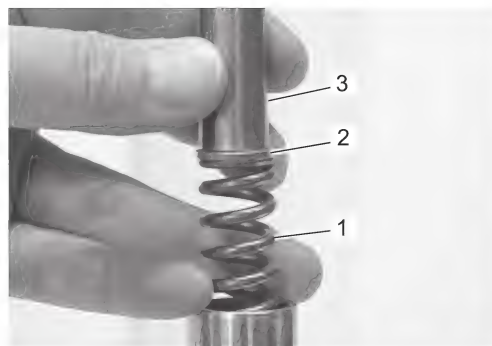


IF34J1220030-01

- 18) Install fork spring (1) into the inner tube with its smaller pitch "a" facing the bottom side.
- 19) Install washer (2) and spacer (3).



IG12K1220024-01



IG12K1220025-01

- 20) Apply fork oil lightly to a new front fork cap bolt O-ring (1).

"A": Fork oil 99000-99001-SS8 (SUZUKI FORK OIL SS-8)



IH23K1220018-01

- 21) Temporarily tighten front fork cap bolt (1) pushing it down.



IH23K1220019-01

2B-9 Front Suspension:

Front Fork Inspection

BENH23K22206005

Refer to "Front Fork Disassembly and Reassembly" (Page 2B-5).

Inner Tube / Outer Tube

Inspect inner tube sliding surface and outer tube sliding surface for scuffing. If any defect is found, replace the part with a new one.



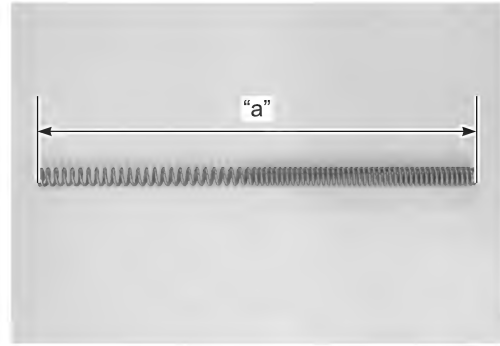
IH23K1220020-01

Fork Spring

Measure the fork spring free length "a". If it is shorter than the service limit, replace it with a new one.

Front fork spring free length

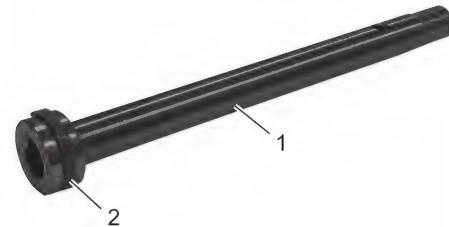
[Limit]: 386 mm (15.2 in)



IG12K1220028-01

Cylinder / Piston Ring

Inspect the cylinder (1) and piston ring (2) for wear or damage. If any defects are found, replace the cylinder or piston ring with a new one.



IH23K1220021-01

Specifications

Tightening Torque Specifications

BENH23K22207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Front fork lower clamp bolts	23	2.3	17.0	☞ (Page 2B-3) / ☞ (Page 2B-4)
Front fork upper clamp bolt	23	2.3	17.0	☞ (Page 2B-3) / ☞ (Page 2B-4)
Handlebar bolt	23	2.3	17.0	☞ (Page 2B-3)
Front fork cylinder bolt	20	2.0	15.0	☞ (Page 2B-7)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

"Front Fork Components" (Page 2B-1)

"Fasteners Information" in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K22208001

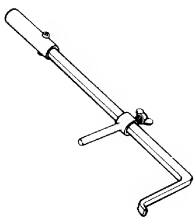
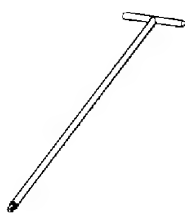
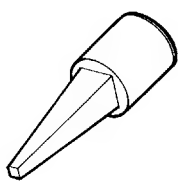
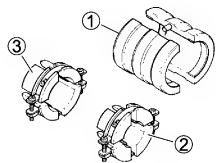
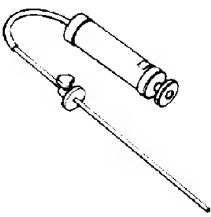
Material	SUZUKI recommended product or Specification		Note
Fork oil	SUZUKI FORK OIL SS-8	P/No.: 99000-99001-SS8	☞ (Page 2B-6) / ☞ (Page 2B-6) / ☞ (Page 2B-7) / ☞ (Page 2B-7) / ☞ (Page 2B-8)
Thread lock cement	THREAD LOCK CEMENT 1322D	P/No.: 99000-32150	☞ (Page 2B-7)

NOTE

Required service material(s) is also described in:
“Front Fork Components” (Page 2B-1)

Special Tool

BENH23K22208002

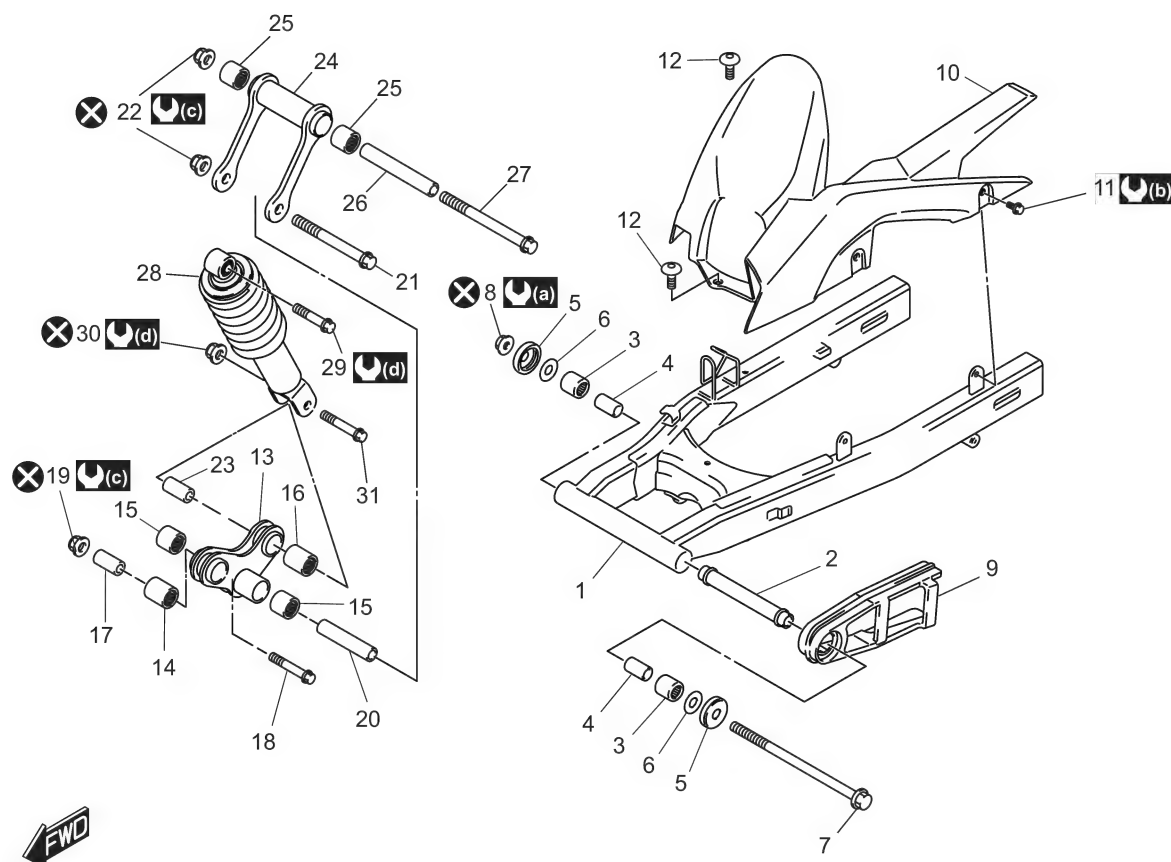
09913-50121 Oil seal remover ☞ (Page 2B-6)		09940-34520 T-handle (Long shank: 3/8 sq.) This tool is included in Front fork assembling tool set (09940-34517). ☞ (Page 2B-5) / ☞ (Page 2B-7)	
09940-34561 Front fork assembling attachment (D) This tool is included in Front fork assembling tool set (09940-34517). ☞ (Page 2B-5) / ☞ (Page 2B-7)		09940-52861 Front fork oil seal installer set 1. Hammer (09941-53610) 2. Attachment (09940-52870) 3. Attachment (09940-52880) ☞ (Page 2B-6)	
09943-74111 Front fork oil level gauge ☞ (Page 2B-8)			

Rear Suspension

Repair Instructions

Rear Suspension Components

BENH23K22306001



IH23K1230001-03

1. Swingarm	13. Rear cushion lever	25. Rear cushion lever rod bearing
2. Swingarm pivot spacer	14. Rear cushion lever front bearing	26. Rear cushion lever rod spacer
3. Swingarm bearing	15. Rear cushion lever center bearing	27. Rear cushion lever rod upper bolt
4. Swingarm spacer	16. Rear cushion lever rear bearing	28. Rear shock absorber
5. Swingarm pivot dust cover	17. Rear cushion lever front spacer	29. Rear shock absorber upper bolt
6. Swingarm washer	18. Rear cushion lever bolt	30. Rear shock absorber lower nut
7. Swingarm pivot shaft	19. Rear cushion lever nut	31. Rear shock absorber lower bolt
8. Swingarm pivot nut	20. Rear cushion lever center spacer	⌚(a) : 57.5 N·m (5.9 kgf-m, 42.7 lbf-ft)
9. Chain buffer	21. Rear cushion lever rod lower bolt	⌚(b) : 5.5 N·m (0.56 kgf-m, 4.05 lbf-ft)
10. Chain case	22. Rear cushion lever rod nut	⌚(c) : 85 N·m (8.7 kgf-m, 63.0 lbf-ft)
11. Chain case bolt	23. Rear cushion lever rear spacer	⌚(d) : 50 N·m (5.1 kgf-m, 37.0 lbf-ft)
12. Chain case clip	24. Rear cushion lever rod	⊗ : Do not reuse.

Rear Suspension On-vehicle Inspection

BENH23K22306002

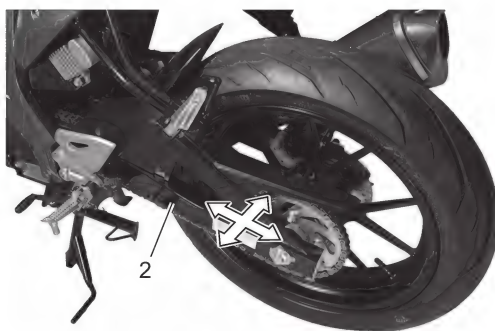
Inspect the rear shock absorber (1) for oil leakage and check that there is no play in the swingarm (2).

Replace any defective parts, if necessary.

- Rear shock absorber replacement: ☞ (Page 2C-2)
- Swingarm inspection: ☞ (Page 2C-5)



IH23K1230002-01



IH23K1230003-01

Rear Shock Absorber Removal and Installation

BENH23K22306003

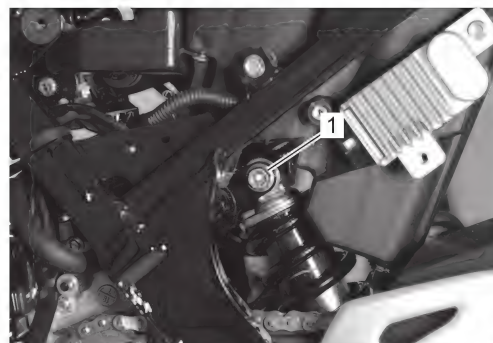
Removal

- 1) Support the motorcycle with center stand to relieve load on the rear shock absorber.
- 2) Remove the following parts.
 - a) Under cowling: ☞ (Page 9D-25)
 - b) Left frame cover: ☞ (Page 9D-30)
- 3) Remove rear shock absorber lower mounting nut (1) and bolt.



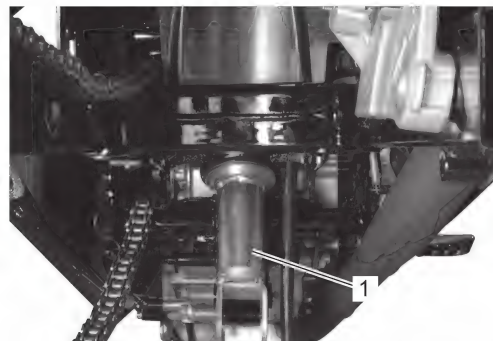
IH23K1230004-01

- 4) Remove rear shock absorber upper mounting bolt (1).



IH23K1230005-01

- 5) Remove the rear shock absorber (1).



IH23K1230006-01

2C-3 Rear Suspension:

Installation

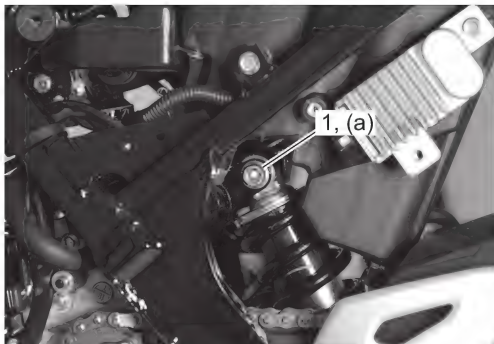
- 1) Install rear shock absorber.
- 2) Insert rear shock absorber upper mounting bolt (1) and lower mounting bolt (2) from left side.
- 3) Tighten upper mounting bolt and new lower mounting nut (3) to specified torque.

Tightening torque

Rear shock absorber upper mounting bolt (a):
50 N·m (5.1 kgf-m, 37.0 lbf-ft)

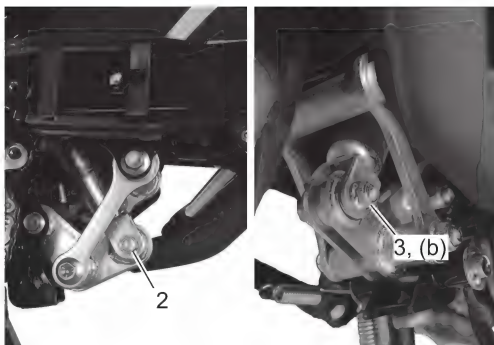
Rear shock absorber lower mounting nut (b): 50
N·m (5.1 kgf-m, 37.0 lbf-ft)

Upper side



IH23K1230007-01

Lower side



IH23K1230008-01

Rear Shock Absorber Inspection

BENH23K22306004

Refer to "Rear Shock Absorber Removal and Installation" (Page 2C-2).

Inspect the rear shock absorber for damage and oil leakage, and absorber bushing (1) for wear and damage. If any defect is found, replace the rear shock absorber with a new one.

NOTICE

Do not attempt to disassemble the rear shock absorber. It is unserviceable.



IH23K1230009-01

Swingarm Removal and Installation

BENH23K22306005

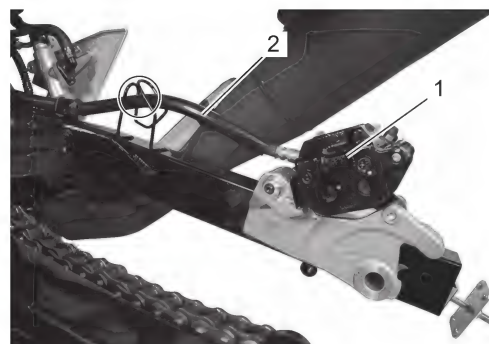
Removal

- 1) Remove rear wheel assembly. (Page 2D-6)
- 2) Remove rear shock absorber. (Page 2C-2)
- 3) Remove chain case (1).



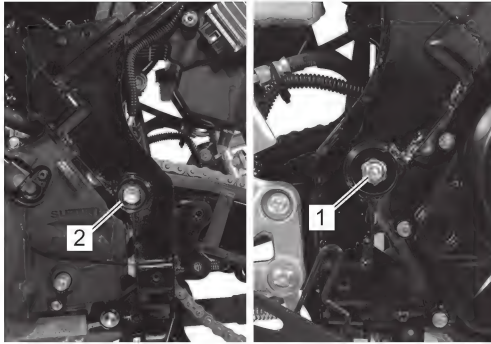
IH23K1230010-01

- 4) Remove rear brake caliper (1) and brake hose (2) from swingarm.



IH23K1230011-02

- 5) Remove swingarm pivot nut (1) and draw out the pivot shaft (2).
- 6) Remove swingarm assembly.



IH23K1230012-01

- 7) Remove chain adjusters (1).



IH23K1230013-02

- 8) Remove chain buffer (1).



IH23K1230014-02

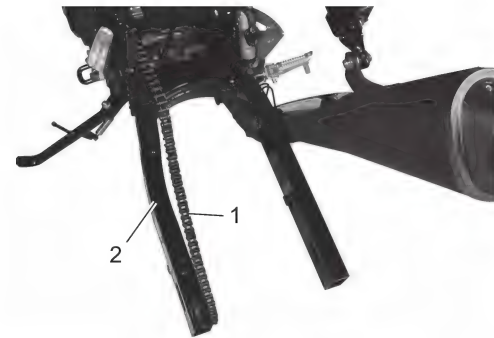
Installation

- 1) Install chain buffer (1).



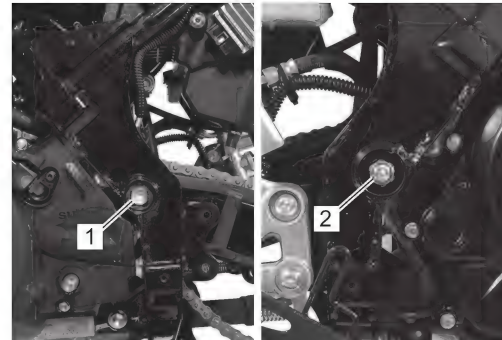
IH23K1230014-02

- 2) Pass drive chain (1) to swingarm and then install swingarm assembly (2).



IH23K1230015-01

- 3) Insert swingarm pivot shaft (1) from left side and tighten a new swingarm pivot nut (2) temporarily.



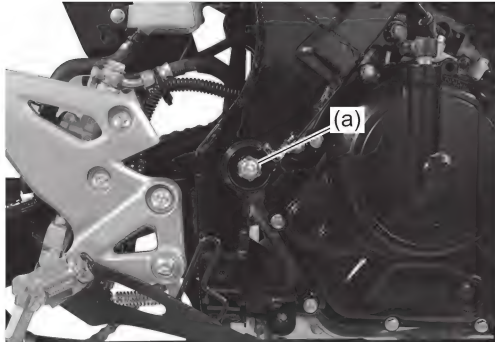
IH23K1230016-01

2C-5 Rear Suspension:

- 4) Install rear shock absorber. ⚙️ (Page 2C-2)
- 5) Tighten swingarm pivot nut to specified torque.

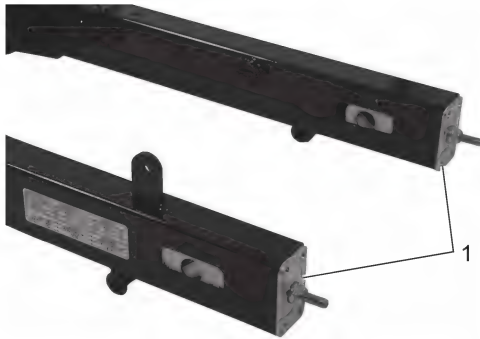
Tightening torque

Swingarm pivot nut (a): 57.5 N·m (5.9 kgf-m, 42.7 lbf-ft)



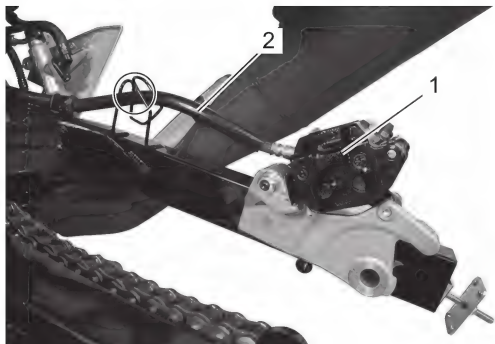
IH23K1230017-01

- 6) Install the chain adjusters (1).



IH23K1230013-02

- 7) Install rear brake caliper (1) and brake hose (2).

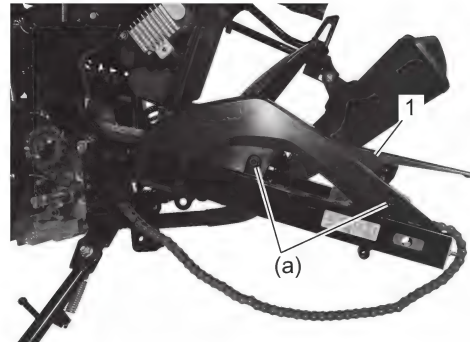


IH23K1230011-02

- 8) Install chain case (1) and tighten its bolts to specified torque.

Tightening torque

Chain case bolt (a): 5.5 N·m (0.56 kgf-m, 4.05 lbf-ft)



IH23K1230018-01

- 9) Install rear wheel assembly. ⚙️ (Page 2D-6)

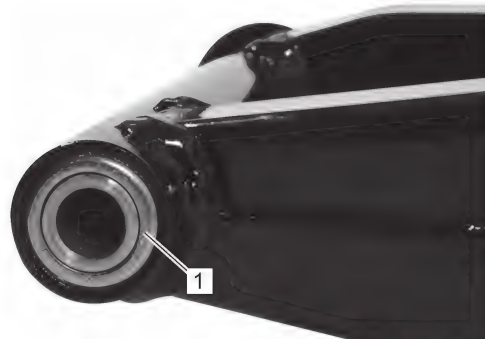
Swingarm Inspection

BENH23K22306006

Refer to "Swingarm Removal and Installation" (Page 2C-3).

Bushing

Inspect bushings (1) for wear and damage. If any defect is found, replace swingarm assembly with a new one.



IH23K1230019-01

Chain Buffer

Inspect chain buffer for wear and damage. If any defect is found, replace chain buffer with a new one.



IH23K1230020-01

Swingarm

Inspect swingarm for damage. If any defect is found, replace swingarm with a new one.



IH23K1230021-01

Swingarm Pivot Shaft

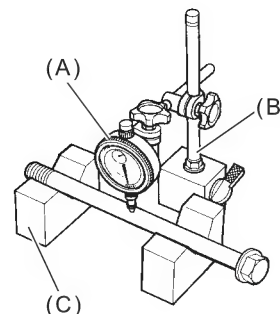
Using a dial gauge, check swingarm pivot shaft for runout. If the runout exceeds the service limit, replace pivot shaft.

Special tool

(A): 09900-20607

(B): 09900-20701

(C): 09900-21304

Swingarm pivot shaft runout**[Limit]: 0.6 mm (0.02 in)**

IF34J1230026-01

Specifications**Tightening Torque Specifications**

BENH23K22307001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Rear shock absorber upper mounting bolt	50	5.1	37.0	☞ (Page 2C-3)
Rear shock absorber lower mounting nut	50	5.1	37.0	☞ (Page 2C-3)
Swingarm pivot nut	57.5	5.9	42.7	☞ (Page 2C-5)
Chain case bolt	5.5	0.56	4.05	☞ (Page 2C-5)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Rear Suspension Components” (Page 2C-1)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment**Special Tool**

BENH23K22308001

09900-20607 Dial gauge (10 x 0.01 mm) ☞ (Page 2C-6)		09900-20701 Dial gauge chuck ☞ (Page 2C-6)	
09900-21304 V blocks ☞ (Page 2C-6)			

Wheels and Tires

Precautions

Precautions for Wheel and Tire

BENH23K22400001

Refer to “General Precautions” in Section 00 (Page 00-1).

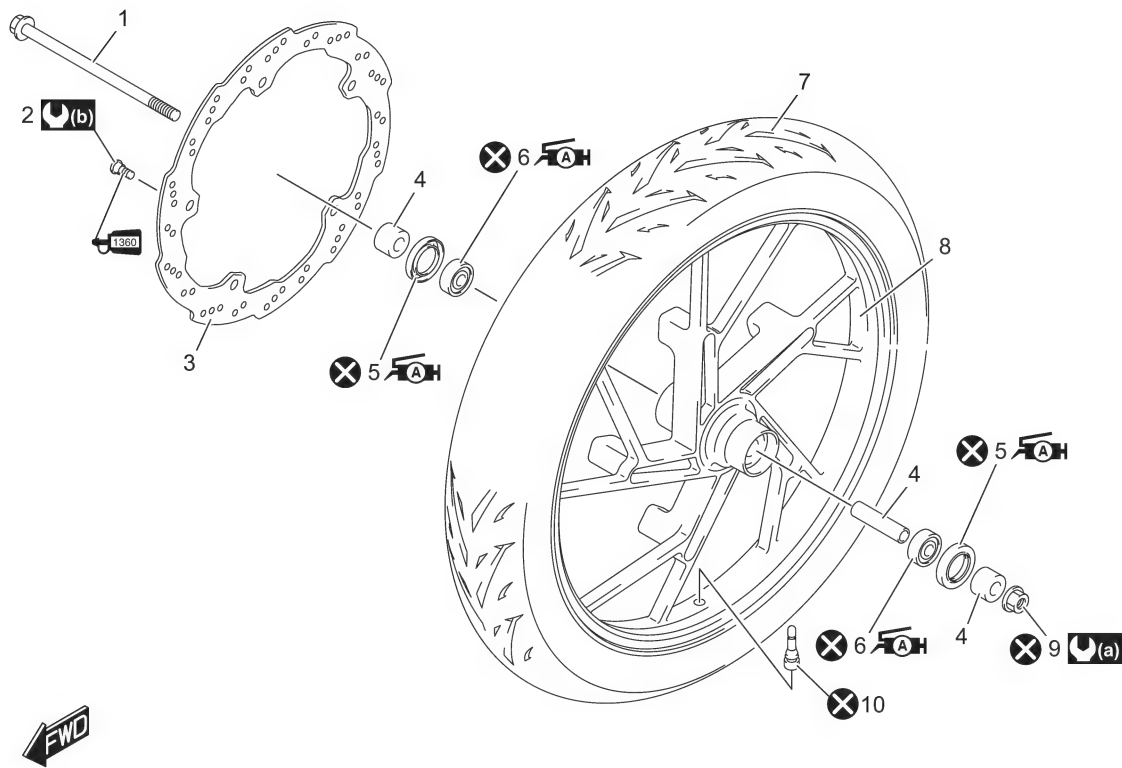
⚠ WARNING

- Replace the wheel when wheel runout exceed the service limit or if find damage such as distortion, crack, nick or scratch.
- When tire replacement is necessary, the original equipment type tire should be used.
- Replacement wheel must be equivalent to the original equivalent wheel.

Repair Instructions

Front Wheel Components

BENH23K22406001

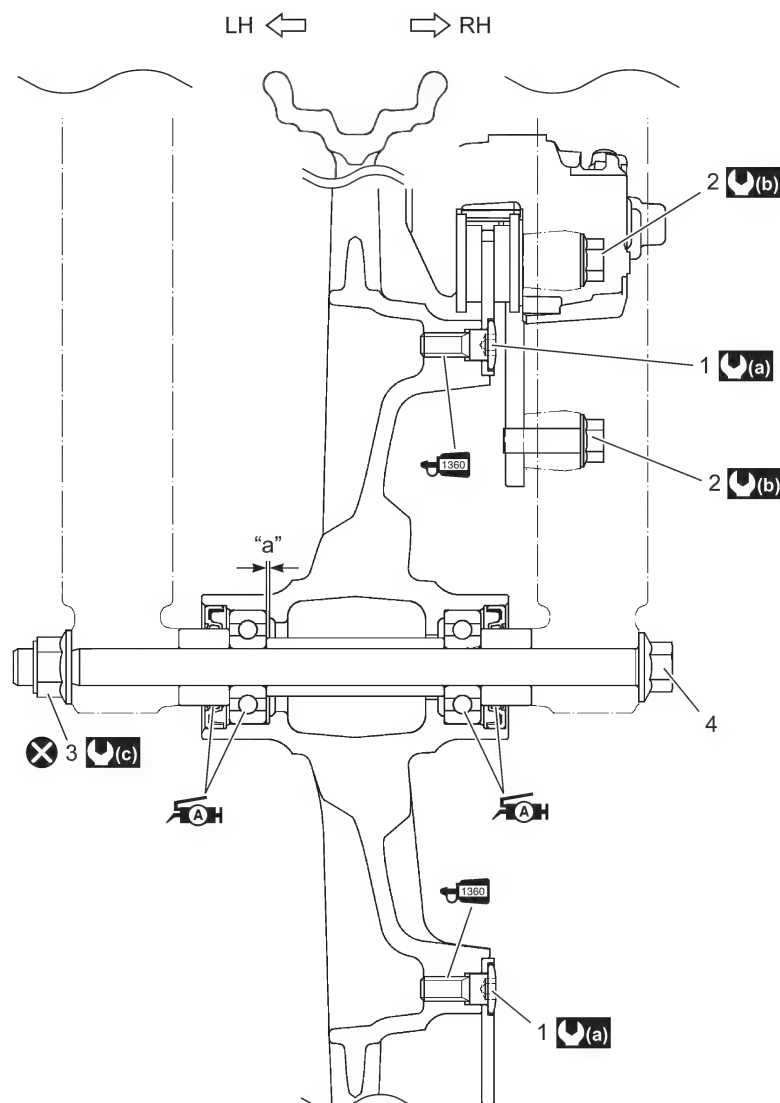


IG12K1240028-04

1. Front axle	5. Dust seal	9. Front axle nut	: Apply grease.
2. Brake disc bolt	6. Bearing	10. Air valve	: Apply thread lock to the thread part.
3. Brake disc	7. Front tire	: 44 N·m (4.4 kgf-m, 31.8 lbf-ft)	: Do not reuse.
4. Spacer	8. Front wheel	: 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	

Front Wheel Assembly Construction

BENH23K22406002



IG12K1240001-03

1. Brake disc bolt	"a": Clearance	: Apply grease.
2. Brake caliper mounting bolt	: 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	: Apply thread lock to the thread part.
3. Front axle nut	: 25 N·m (2.5 kgf-m, 19.0 lbf-ft)	: Do not reuse.
4. Front axle bolt	: 44 N·m (4.4 kgf-m, 31.8 lbf-ft)	

Front Wheel Assembly Removal and Installation

BENH23K22406003

Removal

- 1) Remove front axle nut (1).



IH23K1240025-01

- 2) Raise front wheel off the ground and support the motorcycle with a jack or a wooden block.
- 3) Draw out front axle (1) and remove front wheel.



IH23K1240026-01

- 4) Remove spacers (1).



IH23K1240027-02

Installation

- 1) Install spacers (1) into both sides of the wheel.



IH23K1240027-02

- 2) Install front wheel with front axle and tighten a new front axle nut temporarily.
- 3) Remove the jack or wooden block.
- 4) Tighten front axle nut to specified torque.

Tightening torque

Front axle nut (a): 44 N·m (4.4 kgf-m, 31.8 lbf-ft)



IH23K1240029-01

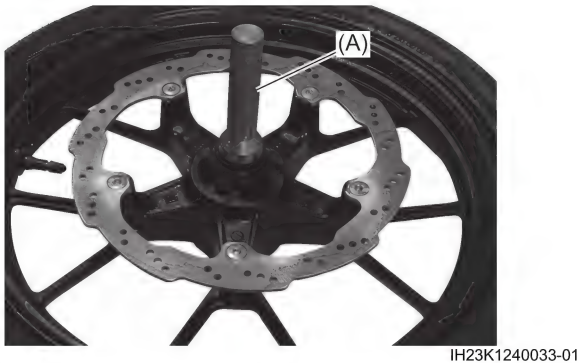
BENH23K22406004

Wheels and Tires: 2D-4

2D-5 Wheels and Tires:

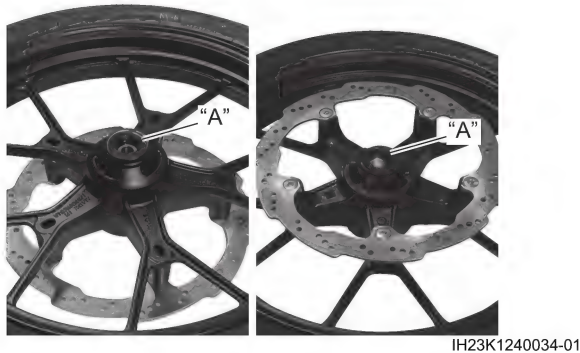
3) Install new dust seals on both sides using special tool.

Special tool
(A): 09913-70210



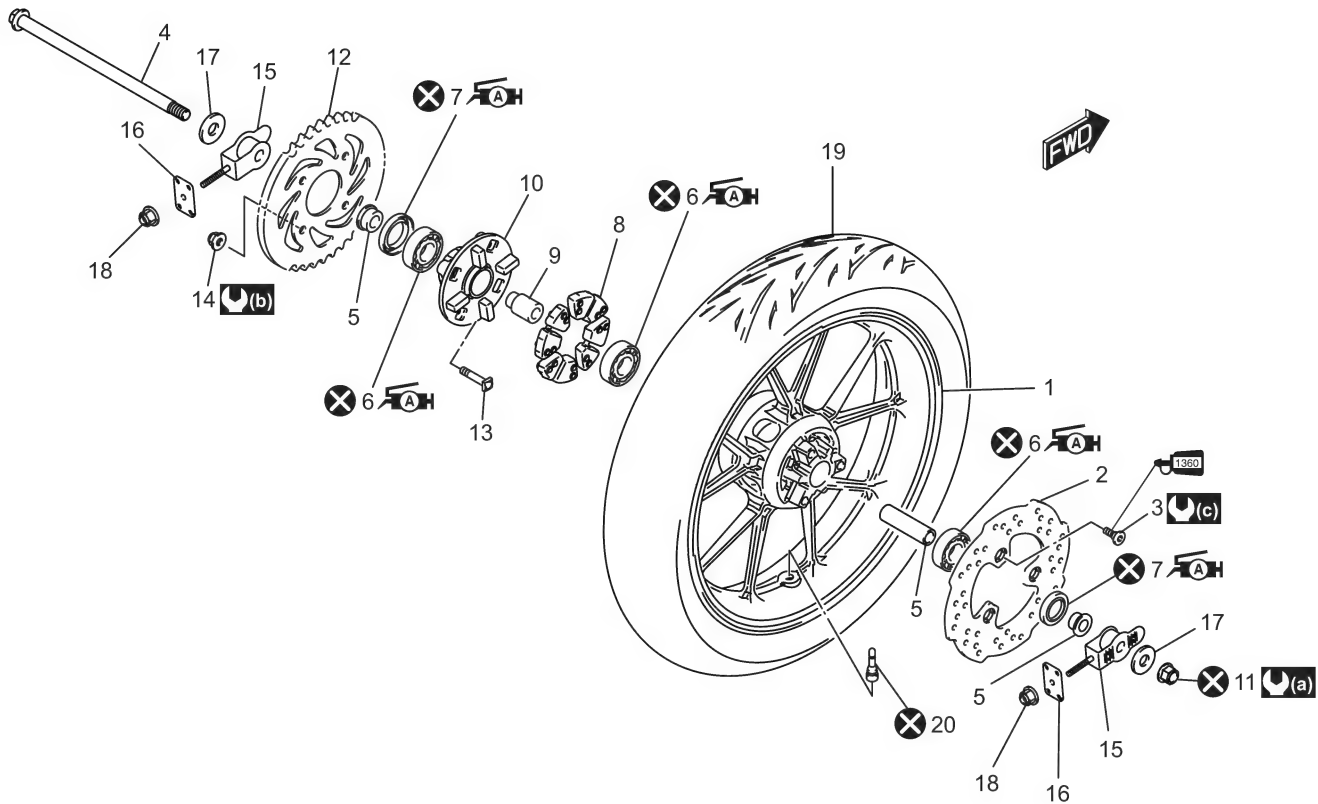
4) Apply grease to the lip of dust seals.

“A”: Grease 99000-25011 (SUZUKI SUPER GREASE A)



Rear Wheel Components

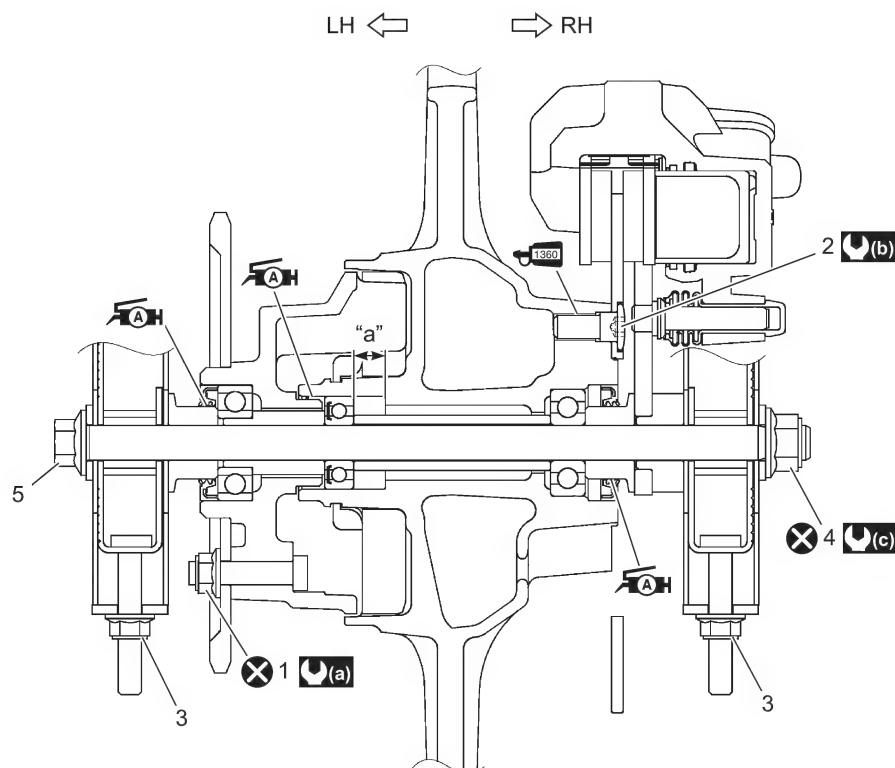
BENH23K22406005



1. Rear wheel	10. Rear sprocket mounting drum	19. Rear tire
2. Brake disc	11. Rear axle nut	20. Air valve
3. Brake disc bolt	12. Rear sprocket	Ⓐ : 65 N·m (6.5 kgf-m, 47.0 lbf-ft)
4. Rear axle	13. Rear sprocket bolt	Ⓑ : 28 N·m (2.9 kgf-m, 21.0 lbf-ft)
5. Spacer	14. Rear sprocket nut	Ⓒ : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
6. Bearing	15. Chain adjuster	Ⓐ : Apply grease.
7. Dust seal	16. Chain adjuster guide plate	Ⓐ : Apply thread lock to the thread part.
8. Rear wheel damper	17. Washer	ⓧ : Do not reuse.
9. Retainer	18. Chain adjuster nut	

Rear Wheel Assembly Construction

BENH23K22406006



IG12K1240012-03

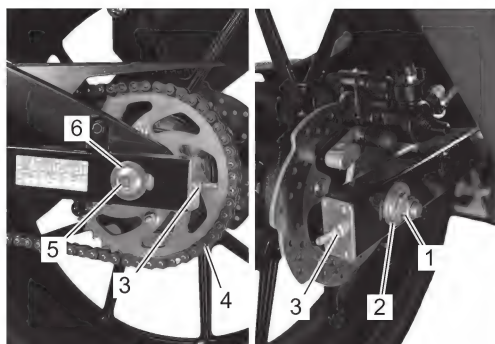
1. Rear sprocket nut	5. Rear axle	(c) : 65 N·m (6.5 kgf-m, 47.0 lbf-ft)
2. Brake disc bolt	"a": Clearance	AH : Apply grease.
3. Chain adjuster nut	(a) : 28 N·m (2.9 kgf-m, 21.0 lbf-ft)	1360 : Apply thread lock to the thread part.
4. Rear axle nut	(b) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	X : Do not reuse.

Rear Wheel Assembly Removal and Installation

BENH23K22406007

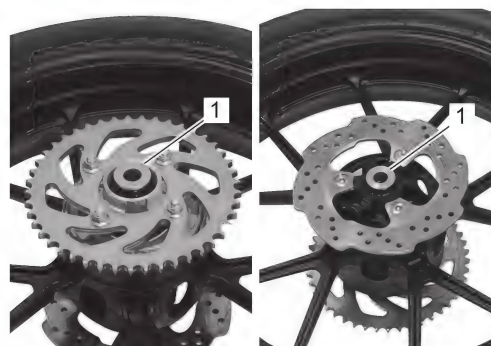
Removal

- 1) Support motorcycle with center stand.
- 2) Remove rear brake pads. (Page 4C-2)
- 3) Remove rear axle nut (1) and washer (2).
- 4) Loosen drive chain adjuster nuts (3).
- 5) Disengage drive chain (4) from rear sprocket.
- 6) Draw out rear axle (5) and washer (6).
- 7) Remove rear wheel assembly.



IH23K1240036-01

- 8) Remove right and spacers (1).

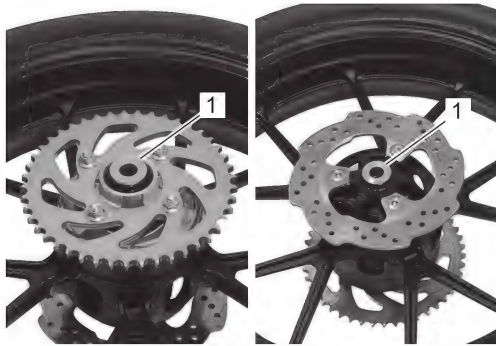


IH23K1240037-02

2D-7 Wheels and Tires:

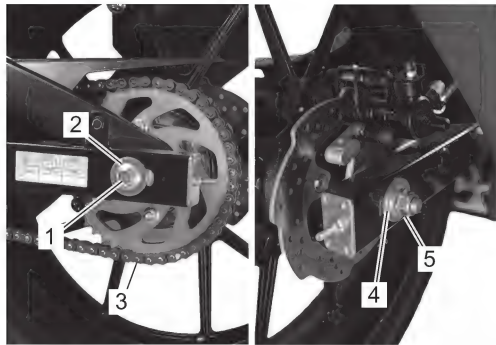
Installation

- 1) Install right and spacers (1).



IH23K1240037-02

- 2) Install rear wheel assembly.
- 3) Install rear axle (1) and washer (2).
- 4) Engage drive chain (3) to rear sprocket.
- 5) Install washer (4) and tighten a new rear axle nut (5) temporarily.



IH23K1240038-01

- 6) Adjust drive chain slack. (Page 3A-2)
- 7) Tighten rear axle nut to specified torque.

Tightening torque

Rear axle nut: 65 N·m (6.5 kgf-m, 47.0 lbf-ft)

- 8) Install rear brake pads. (Page 4C-2)

Rear Wheel Dust Seal / Rear Wheel Bearing Removal and Installation

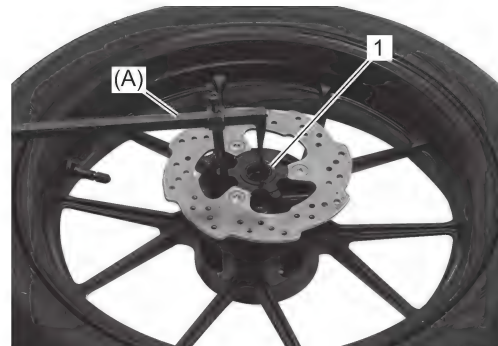
BENH23K22406008

Removal

- 1) Remove rear sprocket mounting drum assembly. (Page 3A-6)
- 2) Remove dust seal (1) using special tool.

Special tool

(A): 09913-50121

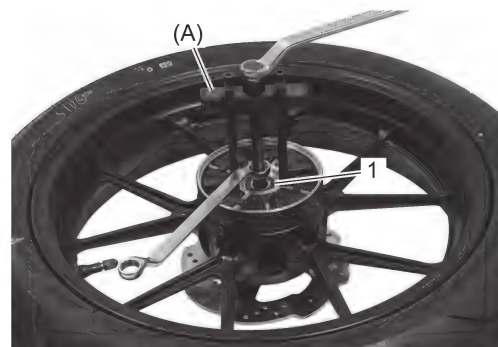


IH23K1240039-01

- 3) Remove bearings (1) on both sides using special tool.

Special tool

(A): 09921-20240



IH23K1240040-01

- 4) Remove spacer (1).

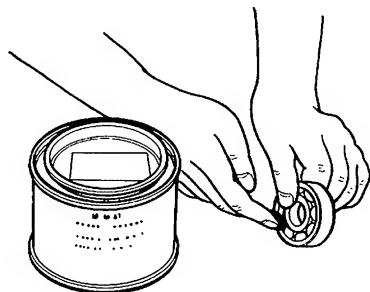


IH23K1240041-01

Installation

- 1) Apply grease to new wheel bearings.

Grease 99000-25011 (SUZUKI SUPER GREASE A)



I649G1240019-02

- 2) First install the right wheel bearing (1), then install spacer (2) and left wheel bearing (3) using special tools.

NOTICE

The sealed cover of the bearing must face outside.

Special tool

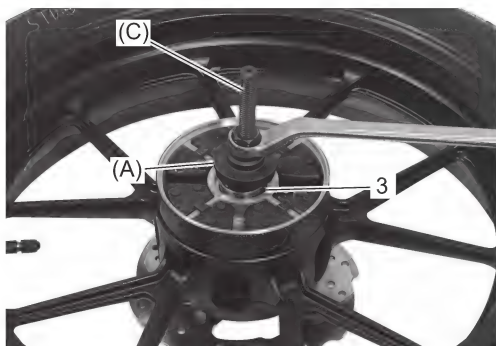
(A): 09924-84521

(B): 09924-84510

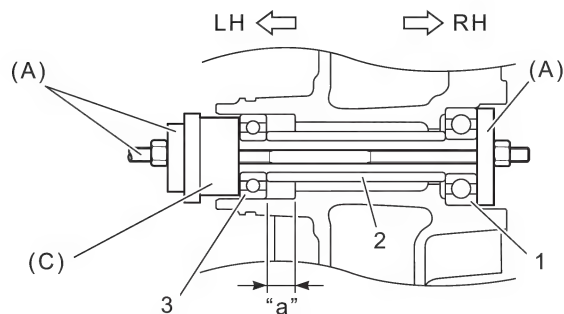
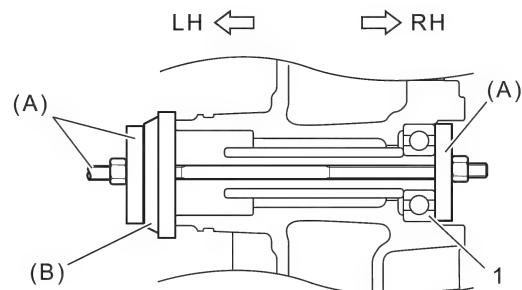
(C): 09913-70210



IH23K1240042-01



IH23K1240043-01



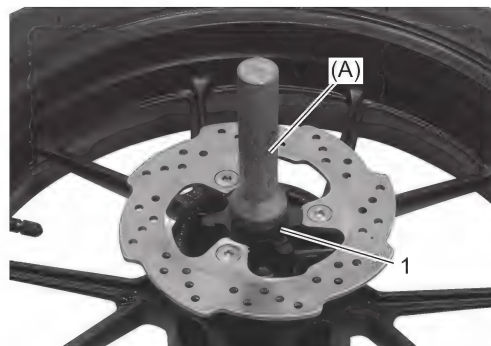
IG12K1240021-03

"a": Clearance

- 3) Install a new dust seal (1) using the special tool.

Special tool

(A): 09913-70210



IH23K1240044-01

- 4) Apply grease to the lip of the dust seal.

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)



IH23K1240045-01

- 5) Install the removed parts.

2D-9 Wheels and Tires:





Wheel / Wheel Axle Inspection

BENH23K22406009

Refer to "Front Wheel Assembly Removal and Installation" (Page 2D-3).

Refer to "Rear Wheel Assembly Removal and Installation" (Page 2D-6).

Wheel

- 1) Remove brake pads.
 - Front:  (Page 4B-2)
 - Rear:  (Page 4C-2)
- 2) Make sure that the wheel runout checked as shown does not exceed the service limit. An excessive runout is usually due to worn or loosened wheel bearings and can be reduced by replacing the bearings.
 - Front:  (Page 2D-4)
 - Rear:  (Page 2D-7)If bearing replacement fails to reduce the runout, replace the wheel.

Special tool

(A): 09900-20607

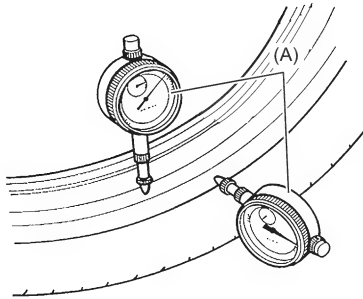
Wheel rim runout

Front



Axial & Radial [Limit]: 2.0 mm (0.08 in)

Rear

Axial & Radial [Limit]: 2.0 mm (0.08 in)



ID26J1240033-01

- 3) Install brake pads.
 - Front:  (Page 4B-2)
 - Rear:  (Page 4C-2)

Wheel Axle

Using a dial gauge, check the wheel axle for runout. If the runout exceeds the limit, replace the wheel axle.

Special tool

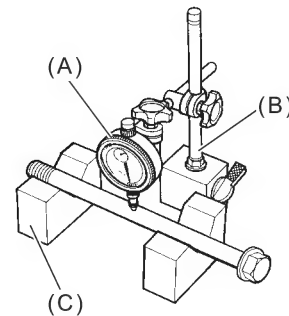
(A): 09900-20607

(B): 09900-20701

(C): 09900-21304

Wheel axle runout



Front & Rear [Limit]: 0.25 mm (0.010 in)



IF34J1240025-01

Dust Seal

Inspect dust seals lips (1) for wear or damage. If any defect is found, replace dust seals with new ones.

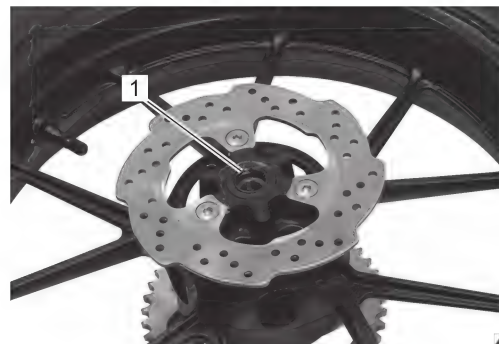
- Front:  (Page 2D-4)
- Rear:  (Page 2D-7)

Front



IH23K1240046-01

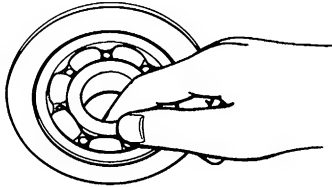
Rear



IH23K1240047-01

Wheel Bearing

- 1) Remove rear sprocket mounting drum assembly.
☞ (Page 3A-6)
- 2) Inspect the play of the wheel bearings by hand while they are in the wheel. Rotate the inner race by hand to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual.
 - Front: ☞ (Page 2D-4)
 - Rear: ☞ (Page 2D-7)



I649G1240015-02

- 3) Install rear sprocket mounting drum assembly.
☞ (Page 3A-6)

Brake Disc

- Front: ☞ (Page 4B-8)
- Rear: ☞ (Page 4C-6)

Rear Sprocket

Refer to "Rear Sprocket Mounting Drum / Sprocket Inspection" in Section 3A (Page 3A-7).

Tire

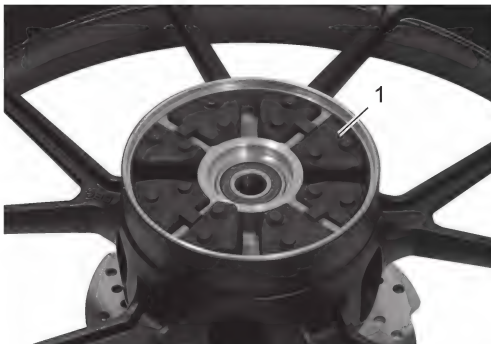
Refer to "Tire Inspection and Cleaning" (Page 2D-11).

Rear Wheel Damper Removal and Installation

BENH23K22406010

Removal

- 1) Remove rear sprocket mounting drum assembly.
☞ (Page 3A-6)
- 2) Remove rear wheel damper (1).

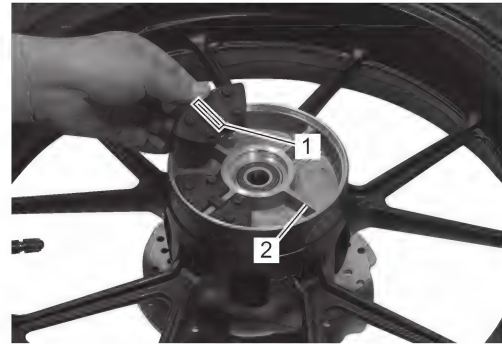


IH23K1240048-01

Installation

Install rear wheel damper in reverse order of removal. Pay attention to the following point:

- Install the rear wheel damper aligning its groove (1) with the rib (2) of the rear wheel.



IH23K1240049-01

Rear Wheel Damper Inspection

BENH23K22406011

Inspect rear wheel damper for wear and damage. Replace the damper if there is anything unusual.



IH23K1240050-01

Tire Inspection and Cleaning

BENH23K22406012

Tire

Wipe the tire clean and check for the following points:

- Nick and rupture on side wall
- Tread separation
- Abnormal, uneven wear on tread
- Surface damage on bead
- Localized tread wear due to skidding (Flat spot)
- Abnormal condition of inner liner

Tire size

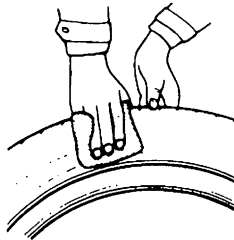
Front [Standard]: 90/80-17 M/C 46P, tubeless

Rear [Standard]: 130/70-17 M/C 62P, tubeless

Tire type

Front [Standard]: IRC/NR88

Rear [Standard]: IRC/NR88



I649G1240042-02

Tire tread condition

Operating the motorcycle with excessively worn tires will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace a tire when the remaining depth of tire tread reaches the following specification.

Special tool

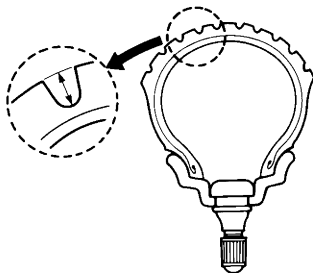
09900-20805

Tire tread depth

Recommend depth

Front [Standard]: 1.6 mm (0.06 in)

Rear [Standard]: 2.0 mm (0.08 in)



I310G1020068-02

Tire pressure

If the tire pressure is too high or too low, steering will be adversely affected and tire wear increased. Therefore, maintain the correct tire pressure for good roadability or shorter tire life will result. Cold inflation tire pressure is as follows.

Cold inflation tire pressure

Solo riding

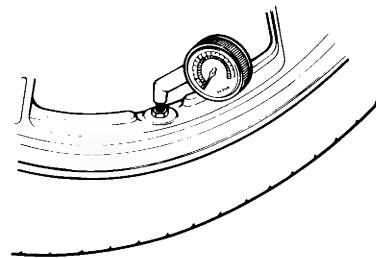
Front [Standard]: 200 kPa (2.00 kgf/cm², 29 psi)

Rear [Standard]: 225 kPa (2.25 kgf/cm², 33 psi)

Dual riding

Front [Standard]: 200 kPa (2.00 kgf/cm², 29 psi)

Rear [Standard]: 280 kPa (2.80 kgf/cm², 41 psi)



I310G1020069-02

Tire Removal and Installation

BENH23K22406013

Refer to "Front Wheel Assembly Removal and Installation" (Page 2D-3).

Refer to "Rear Sprocket Mounting Drum Assembly Removal and Installation" in Section 3A (Page 3A-6).

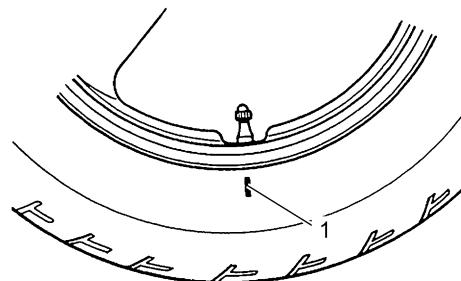
Removal

▲ CAUTION

For removal and installation procedure of tire, follow the instructions given by the tire changer manufacturer.

NOTE

When removing the tire in case of repair or inspection, mark the tire with a chalk to indicate the tire position relative to the valve position.



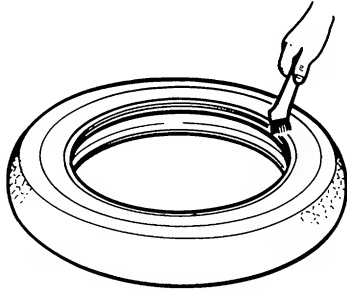
IE31J1240036-01

Installation

- 1) Apply tire lubricant to the tire bead.

NOTICE

- Do not use oil, grease or gasoline in place of tire bead lubricant.
- Do not reuse the air valve which has been once removed.

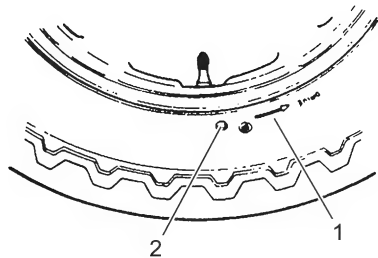


I649G1240038-02

- 2) Install the tire aligning the arrow (1) on the side wall with the direction of wheel rotation.

NOTICE

- When installing a repaired tire, align the chalk mark put on the tire at the time of removal with the valve position.
- When installing a new tire, align the light point mark (2) on the tire side wall with the valve position.



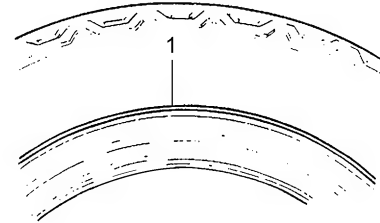
IF04K1240038-01

- 3) Bounce the tire several times while rotating. This makes the tire bead expand outward to contact the wheel, thereby facilitating air inflation.
- 4) Inflate the tire.

▲ WARNING

- Do not stand over a tire being inflated. Tire bead may break when the bead snaps over rim's safety hump and cause serious personal injury.
- Do not inflate tires exceeding 400 kPa (4.0 kgf/cm², 57 psi). Over-inflation may cause the bead to break, which may cause serious personal injury.

- 5) Check "rim line" (1) cast on the tire side walls. The line must be equidistant from wheel rim all around. If the distance between rim line and wheel rim varies, this indicates that the bead is not properly seated. If this is the case, deflate the tire completely and unseat the bead for both sides. Coat the bead with lubricant and fit the tire again.



IE31J1240037-01

- 6) When the bead has been fitted properly, install the valve core and adjust the pressure to specification.
(Page 2D-11)

Wheel Rim / Air Valve Inspection and Cleaning

BENH23K22406014

Refer to "Tire Removal and Installation" (Page 2D-11).
Refer to "Air Valve Removal and Installation" (Page 2D-13).

Wheel Rim

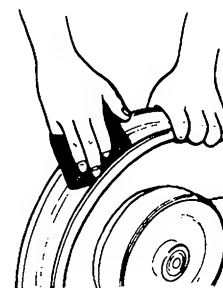
Wipe the wheel clean and check for the following points:

- Distortion and crack.
- Any flaws and scratches at the bead seating area.
- Wheel rim runout. (Page 2D-9)

Wheel rim size

Front [Standard]: 17 M/C x MT 1.60

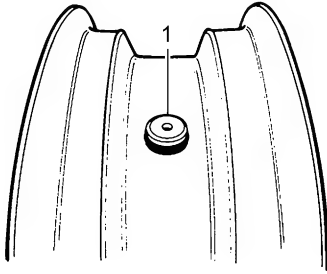
Rear [Standard]: 17 M/C x MT 1.85



I649G1240041-02

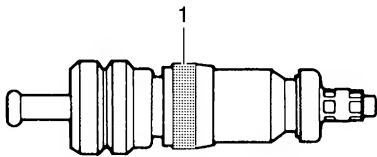
Air Valve

- Inspect the air valve (1) for peeling and damage. If any defect is found, replace air valve with a new one.



IE31J1240038-01

- Inspect valve core seal (1) for wear and damage. If any defect is found, replace valve core with a new one.



IE31J1240039-01

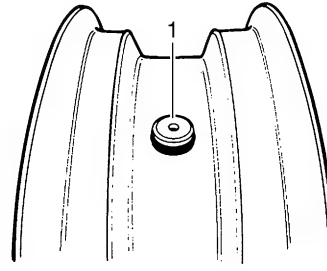
Air Valve Removal and Installation

BENH23K22406015

Refer to "Tire Removal and Installation" (Page 2D-11).

Removal

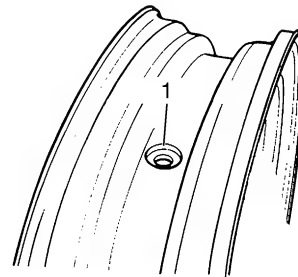
- Remove air valve (1) from the wheel.



IE31J1240040-01

Installation

- Clean off the dirt around the valve hole (1).

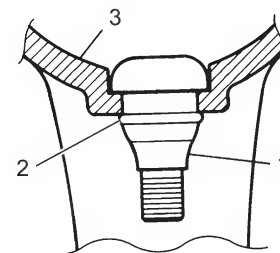


IE31J1240041-01

- Install a new air valve (1) into the air valve hole with a special tire lubricant or neutral soapy liquid applied at valve lip (2).

NOTICE

Be careful not to damage the valve lip of the air valve.



3. Wheel

IF34J1240030-01

Specifications

Tightening Torque Specifications

BENH23K22407001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Front axle nut	44	4.4	31.8	☞ (Page 2D-3)
Rear axle nut	65	6.5	47.0	☞ (Page 2D-7)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Front Wheel Components” (Page 2D-1)

“Front Wheel Assembly Construction” (Page 2D-2)

“Rear Wheel Components” (Page 2D-5)

“Rear Wheel Assembly Construction” (Page 2D-6)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K22408001

Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI SUPER GREASE A	P/No.: 99000–25011	☞ (Page 2D-4) / ☞ (Page 2D-5) / ☞ (Page 2D-8) / ☞ (Page 2D-8)

NOTE

Required service material(s) is also described in:

“Front Wheel Components” (Page 2D-1)

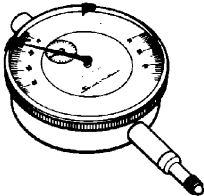
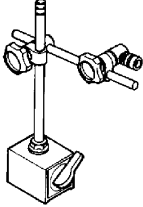
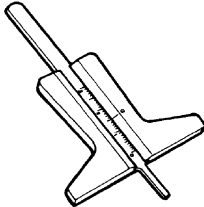
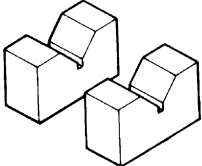
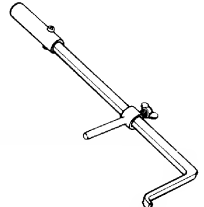
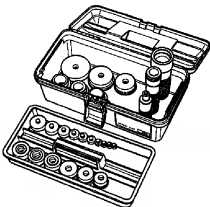
“Front Wheel Assembly Construction” (Page 2D-2)

“Rear Wheel Components” (Page 2D-5)

“Rear Wheel Assembly Construction” (Page 2D-6)

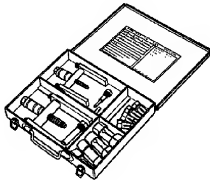
Special Tool

BENH23K22408002

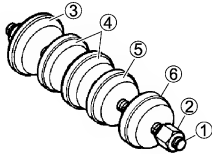
09900–20607 Dial gauge (10 x 0.01 mm) ☞ (Page 2D-9) / ☞ (Page 2D-9)		09900–20701 Dial gauge chuck ☞ (Page 2D-9)	
09900–20805 Tire depth gauge ☞ (Page 2D-11)		09900–21304 V blocks ☞ (Page 2D-9)	
09913–50121 Oil seal remover ☞ (Page 2D-4) / ☞ (Page 2D-7)		09913–70210 Bearing installer set ☞ (Page 2D-5) / ☞ (Page 2D-8) / ☞ (Page 2D-8)	

2D-15 Wheels and Tires:

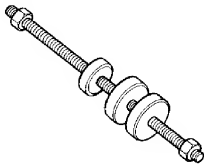
09921–20240
Bearing remover set
🔧 (Page 2D-4) /
🔧 (Page 2D-7)



09924–84510
Bearing installer set
🔧 (Page 2D-4) /
🔧 (Page 2D-8)



09924–84521
Bearing installer set
🔧 (Page 2D-4) /
🔧 (Page 2D-8)



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Precautions

Precautions

Precautions for Driveline / Axle

BENH23K23000001

Refer to "General Precautions" in Section 00 (Page 00-1).

⚠ WARNING

Never inspect or adjust the drive chain while the engine is running.

NOTICE

- Do not use trichloroethylene, gasoline or any similar solvent. These fluids will damage the O-rings of the drive chain.
 - Clean the drive chain with a spray-type chain cleaner and blow dry with compressed air. If the drive chain cannot be cleaned with a spray cleaner, it may be necessary to use a kerosine. Always follow the chemical manufacturer's instructions on proper use, handling and storage.
 - Lubricate the drive chain with a heavy weight motor oil. Wipe off any excess oil or chain lubricant. Do not use any oil sold commercially as "drive chain oil". Such oil can damage the O-rings.
-

Drive Chain / Drive Train / Drive Shaft

Diagnostic Information and Procedures

Drive Chain and Sprocket Symptom Diagnosis

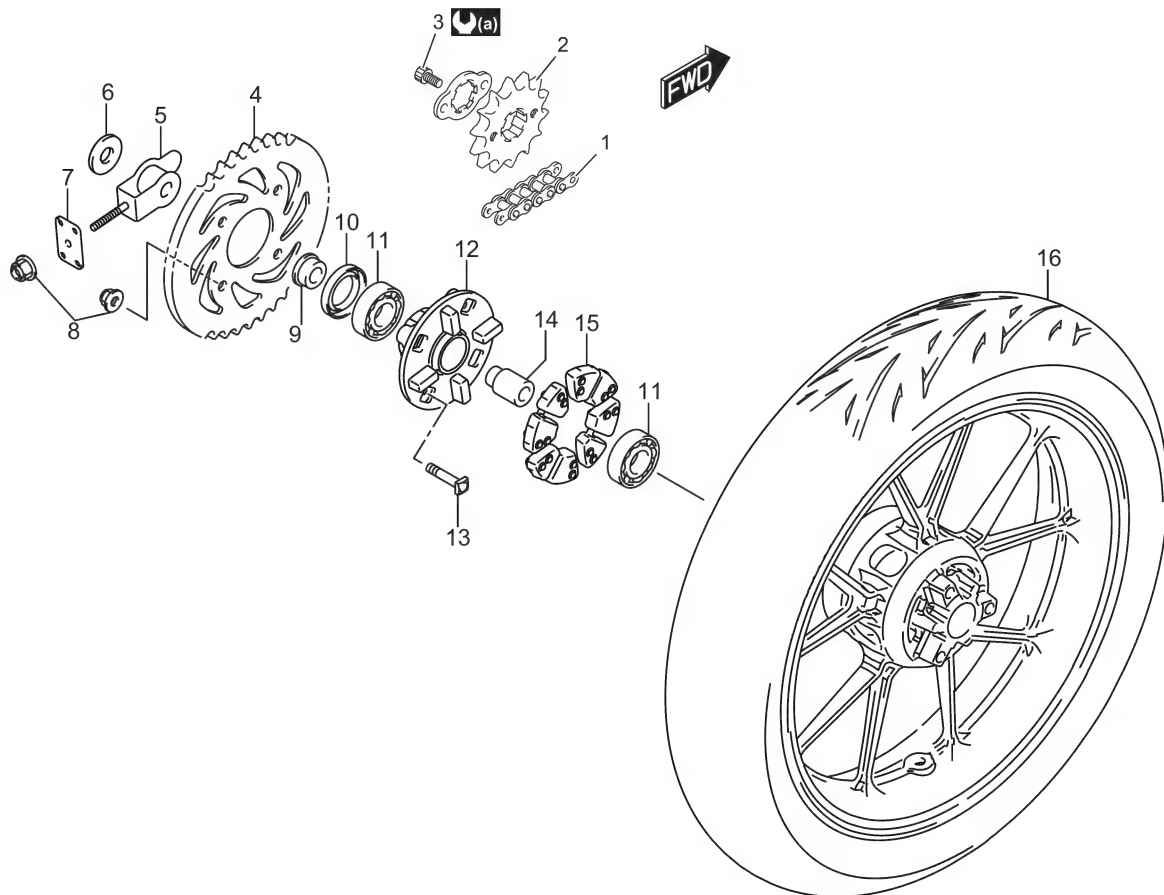
BENH23K23104001

Condition	Possible cause	Correction / Reference Item
Noisy Drive Chain	Worn sprocket.	Replace. (Page 3A-4) (Page 3A-5)
	Worn drive chain.	Replace. (Page 3A-9)
	Stretched drive chain.	Replace. (Page 3A-9)
	Too large drive chain slack.	Adjust. (Page 3A-2)
	Drive chain out of adjustment.	Adjust. (Page 3A-2)

Repair Instructions

Drive Chain Related Components

BENH23K23106001



IH23K1310001-02

1. Drive chain	9. Rear sprocket nut	17. Rear tire
2. Engine sprocket	10. Rear sprocket drum spacer	(a) : 10 N-m (1.0 kgf-m, 7.5 lbf-ft)
3. Engine sprocket bolt	11. Rear sprocket mounting drum seal	(b) : 28 N-m (2.9 kgf-m, 21.0 lbf-ft)
4. Rear sprocket	12. Bearing	(c) : Apply grease.
5. Chain adjuster	13. Rear sprocket drum	(d) : Do not reuse.
6. Rear axle washer	14. Bolt	
7. Chain adjuster guide plate	15. Rear sprocket drum retainer	
8. Nut	16. Rear hub shock absorber	

Drive Chain Inspection and Adjustment

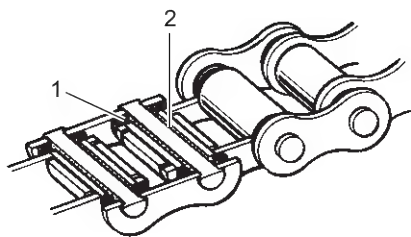
BENH23K23106002

Drive Chain Visual Check

- 1) With the transmission in neutral, support the motorcycle with the center stand and turn the rear wheel slowly by hand.
- 2) Visually check the drive chain for the possible defects listed as follows. If any defects are found, the drive chain must be replaced. (Page 3A-9)
 - Loose pins
 - Damaged rollers
 - Dry or rusted links
 - Kinked or binding links
 - Excessive wear
 - Improper chain adjustment
 - Missing O-rings (1)

NOTE

When replacing the drive chain, replace the drive chain and sprockets as a set.

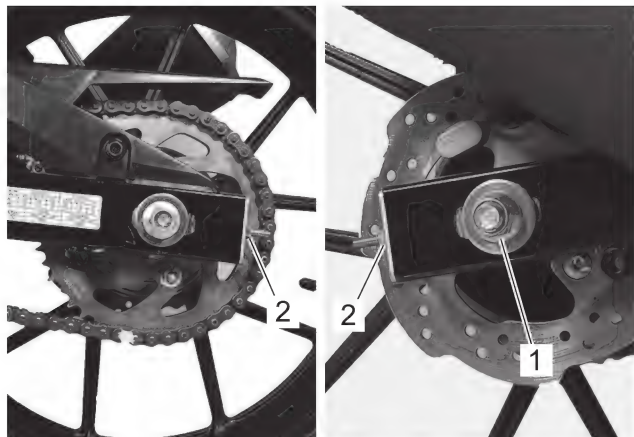


IF34J1310002-01

2. Grease

Drive Chain Length Inspection

- 1) Support the motorcycle with the center stand.
- 2) Loosen the rear axle nut (1).
- 3) Give tension to the drive chain fully by turning both chain adjuster nuts (2).

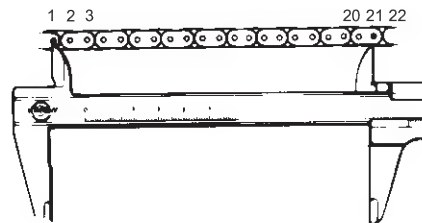


IH23K1310002-01

- 4) Count out 21 pins (20 pitches) on the chain and measure the distance between the two points. If the distance exceeds the service limit, the chain must be replaced. (Page 3A-9)

Drive chain 20-pitch length

[Limit]: 1003.3 mm (39.50 in)

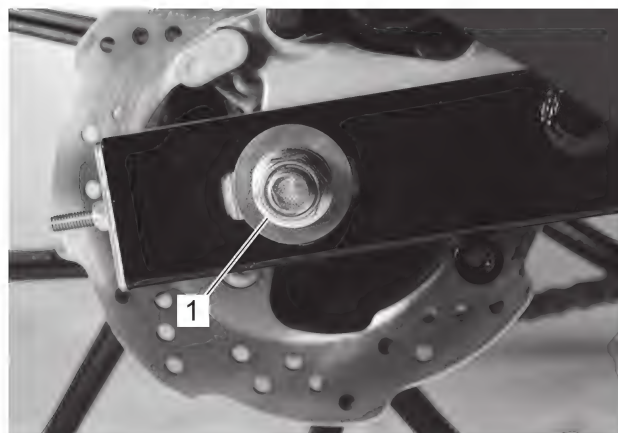


IG12K1310002-01

- 5) After finishing the drive chain length inspection, adjust the drive chain slack. (Page 3A-2)

Drive Chain Slack Adjustment

- 1) Support the motorcycle with the center stand.
- 2) Loosen the rear axle nut (1).



IH23K1310003-01

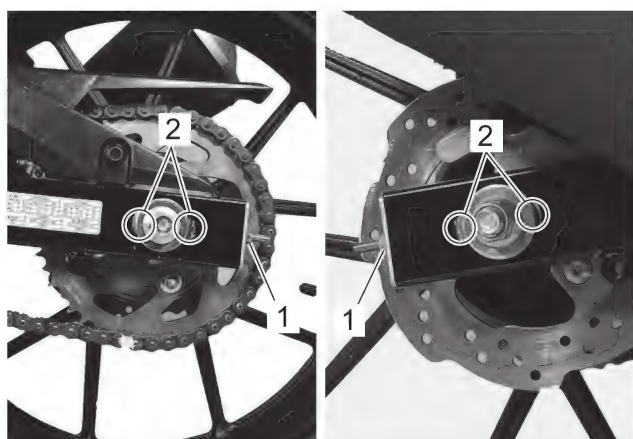
- 3) Loosen or tighten both chain adjuster nuts (1) until the slack "a" at the middle of the chain between the engine and rear sprockets becomes within the standard range.

NOTICE

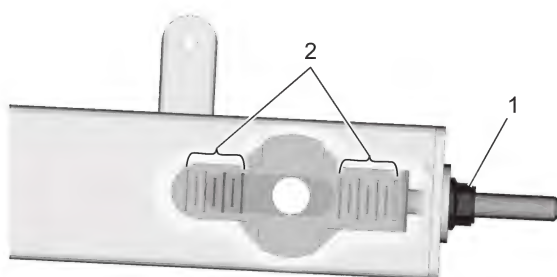
The reference marks (2) on both sides of the chain adjuster and the edge of each swingarm hole (rear side or front side) must be aligned to ensure that the front and rear wheels are correctly aligned.

Drive chain slack

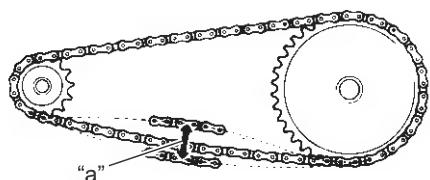
[Standard]: 20 – 30 mm (0.8 – 1.2 in)



IH23K1310004-01



IG12K1310005-01



IF34J1310031-02

- 4) After adjusting the drive chain, tighten the rear axle nut to the specified torque.

Tightening torque

Rear axle nut: 54 N·m (5.5 kgf-m, 40.0 lbf-ft)

- 5) Recheck the drive chain slack after tightening the axle nut.
- 6) Tighten both chain adjuster nuts securely.

Drive Chain Cleaning and Lubricating

BENH23K23106003

- 1) Remove dirt and dust from the drive chain (1). Be careful not to damage the O-rings.
- 2) Clean the drive chain with a sealed drive chain cleaner, or water and neutral detergent.

NOTICE

Cleaning the drive chain improperly can damage O-rings and ruin the drive chain.

- Do not use a volatile solvent such as paint thinner, kerosene and gasoline.
- Do not use high pressure cleaners to clean the drive chain.
- Do not use a wire brush to clean the drive chain.

- 3) Use a soft brush to clean the drive chain. Be careful not to damage the O-rings even when using a soft brush.
- 4) Wipe off water and neutral detergent.
- 5) Lubricate with a motorcycle sealed drive chain lubricant or high viscosity oil.

NOTICE

Some drive chain lubricants contain solvents and additives which could damage the O-rings in the drive chain.

Use sealed drive chain lubricant which is specifically intended for use with sealed drive chains.

- 6) Lubricate both front and back plates of the drive chain.
- 7) Wipe off excess lubricant after lubricating all around of the drive chain.

NOTE

The standard drive chain is a RK 428KLO, 116 Links. SUZUKI recommends to use this standard drive chain as a replacement.



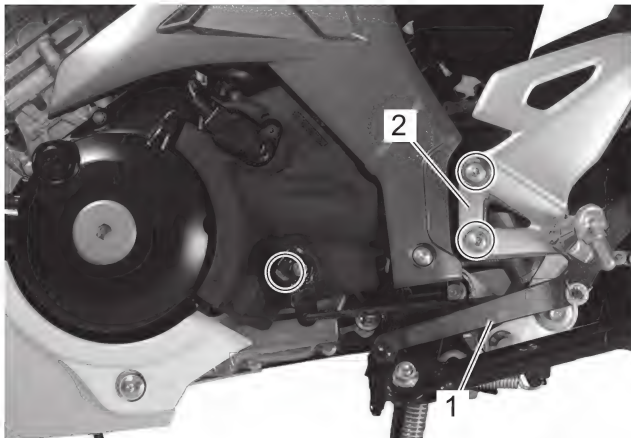
IH23K1310005-01

Engine Sprocket Removal and Installation

BENH23K23106004

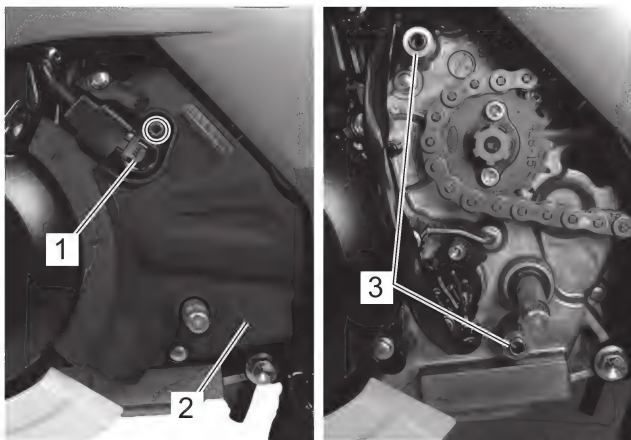
Removal

- 1) Remove the gearshift lever (1) and left footrest (2).



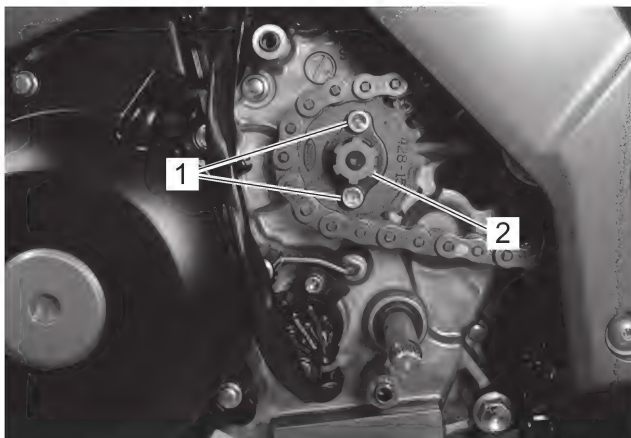
IH23K1310006-01

- 2) Remove the speed sensor (1) from the engine sprocket cover.
3) Remove the engine sprocket cover (2) and dowel pins (3).



IH23K1310007-01

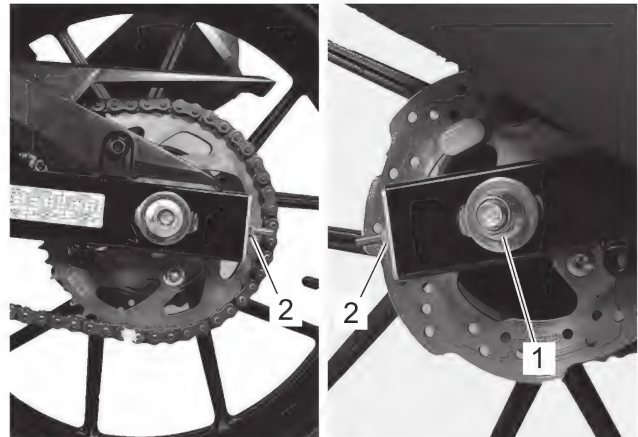
- 4) Remove the engine sprocket bolts (1) while depressing the rear brake pedal.
5) Remove the lock washer (2).



IH23K1310008-01

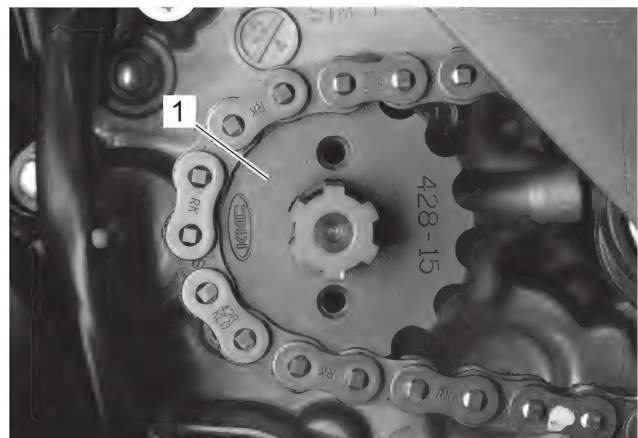
- 6) Support the motorcycle with the center stand.

- 7) Loosen the rear axle nut (1).
8) Loosen the adjuster nuts (2) to provide additional chain slack.



IH23K1310009-01

- 9) Remove the engine sprocket (1).



IH23K1310010-01

Installation

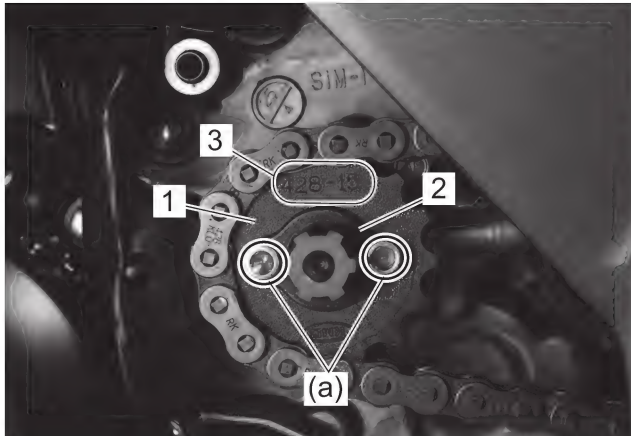
- 1) Install the engine sprocket (1) and lock washer (2).
2) Tighten the engine sprocket bolts to the specified torque.

NOTE

The stamped mark (3) on the engine sprocket should face outside.

Tightening torque

Engine sprocket bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

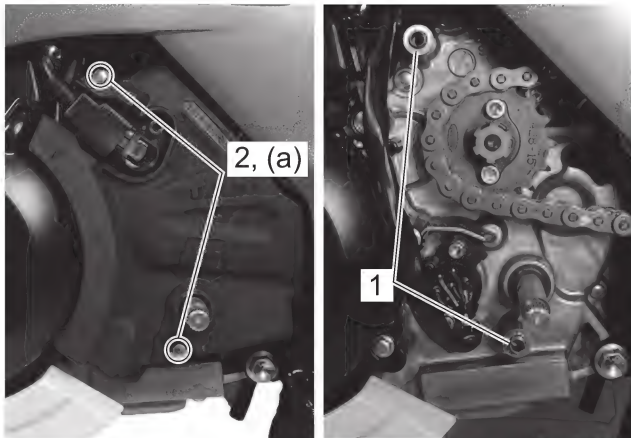


IH23K1310011-01

- 3) Install the dowel pins (1) and engine sprocket cover (2) and tighten its bolts to the specified torque.

Tightening torque

Engine sprocket cover bolt (a): 4.0 N·m (0.41 kgf-m, 2.95 lbf-ft)



IH23K1310012-01

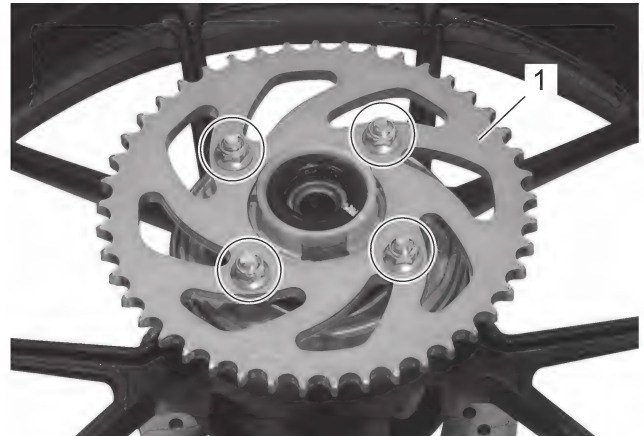
- 4) Install the speed sensor. (Page 1C-11)
 5) Install the left front footrest. (Page 9E-4)
 6) Install the gearshift lever. (Page 5B-12)
 7) Adjust the drive chain slack. (Page 3A-2)

Rear Sprocket Removal and Installation

BENH23K23106005

Removal

- 1) Remove the rear wheel. (Page 2D-6)
- 2) Remove the rear sprocket (1).



IH23K1310013-01

Installation

Install the rear sprocket in the reverse order of removal. Pay attention to the following point:

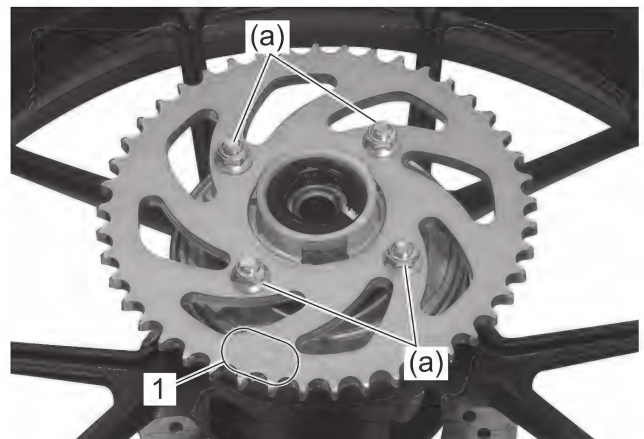
- Tighten the rear sprocket nuts to the specified torque.

NOTE

The stamped mark (1) on the sprocket should face outside.

Tightening torque

Rear sprocket nut (a): 21.6 N·m (2.2 kgf-m, 15.9 lbf-ft)



IH23K1310014-01

Rear Sprocket Mounting Drum Assembly Removal and Installation

BENH23K23106006

Removal

- 1) Remove the rear wheel. (Page 2D-6)
- 2) Remove the rear sprocket mounting drum assembly (1).



IH23K1310015-01

- 3) Remove the retainer (1).



IH23K1310016-01

Installation

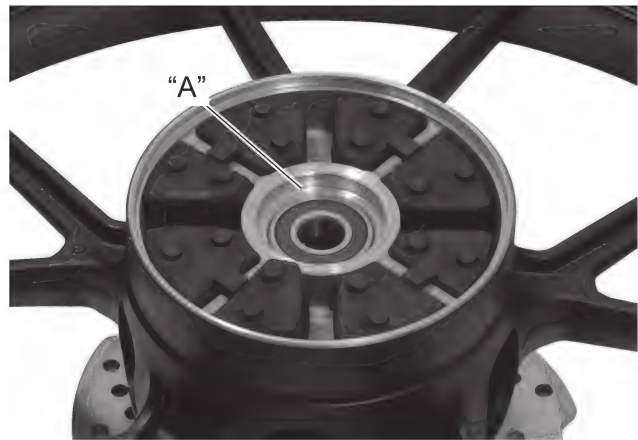
- 1) Install the retainer (1).



IH23K1310017-01

- 2) Apply grease to the contacting surface between the rear wheel hub and the rear sprocket mounting drum.

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)



IH23K1310018-01

- 3) Install the rear sprocket mounting drum assembly to the rear wheel assembly.

Rear Sprocket Mounting Drum / Sprocket Inspection

BENH23K23106007

Refer to "Rear Wheel Assembly Removal and Installation" in Section 2D (Page 2D-6).

Dust Seal

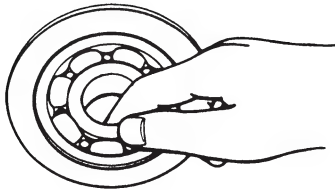
Inspect the sprocket mounting drum dust seal (1) for wear or damage. If any defect is found, replace the dust seal with a new one. (Page 3A-8)



IH23K1310019-01

Bearing

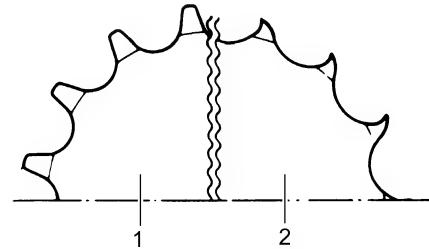
Inspect the play of the rear sprocket mounting drum bearing by hand while they are in the wheel and drum. Rotate the inner race by hand to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual. (Page 3A-8)



I649G1310015-02

Sprocket

- 1) Remove the engine sprocket cover. (Engine sprocket only) (Page 3A-4)
- 2) Inspect the sprocket teeth for wear. If they are worn as shown, replace the engine sprocket, rear sprocket and drive chain as a set.
 - Engine sprocket: (Page 3A-4)
 - Rear sprocket: (Page 3A-5)



IE31J1310022-01

1. Normal wear	2. Excessive wear
----------------	-------------------

- 3) Install the engine sprocket cover. (Engine sprocket only) (Page 3A-4)

Wheel Damper

Refer to "Rear Wheel Damper Inspection" in Section 2D (Page 2D-10).

Drive Chain

Refer to "Drive Chain Inspection and Adjustment" (Page 3A-2).

Rear Sprocket Mounting Drum Dust Seal / Bearing Removal and Installation

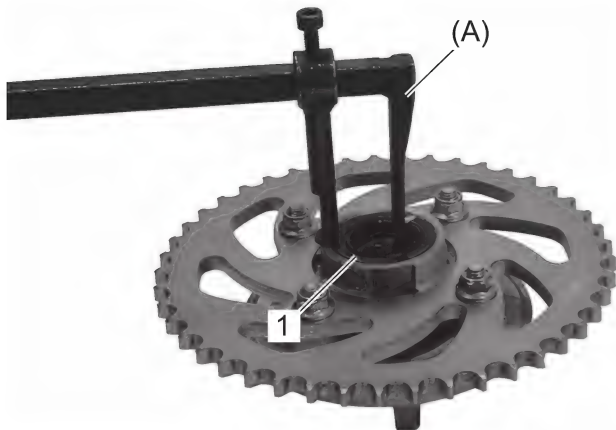
BENH23K23106008

Removal

- 1) Remove the rear sprocket mounting drum assembly.
(Page 3A-6)
- 2) Remove the dust seal (1) using the special tool.

Special tool

(A): 09913-50121

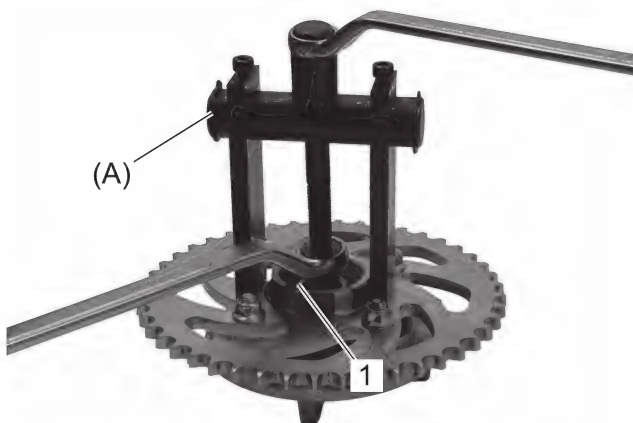


IH23K1310020-01

- 3) Remove the bearing (1) using the special tool.

Special tool

(A): 09921-20240



IH23K1310021-01

Installation

- 1) Apply grease to a new bearing.

Grease 99000-25011 (SUZUKI SUPER GREASE A)



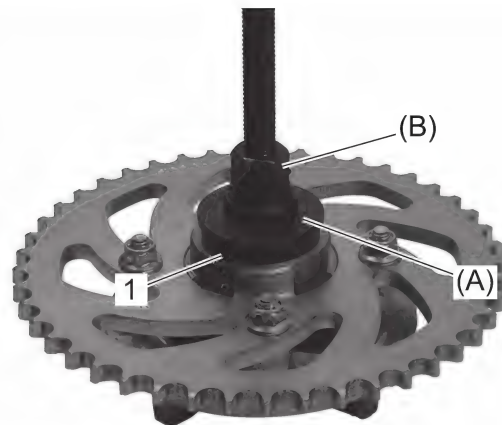
I649G1310020-02

- 2) Install the bearing (1) using the special tool.

Special tool

(A): 09913-70210

(B): 09924-84510

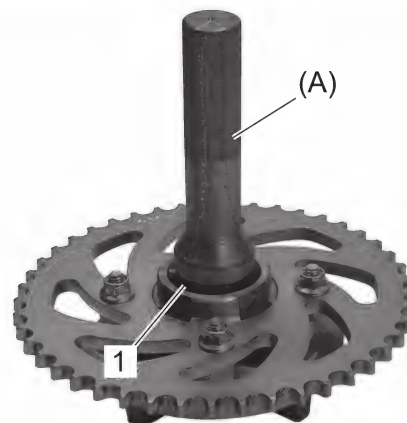


IH23K1310022-01

- 3) Install a new dust seal (1) using the special tool.

Special tool

(A): 09913-70210



IH23K1310023-01

- 4) Apply grease to the dust seal lip.

“A”: Grease 99000–25011 (SUZUKI SUPER GREASE A)



IH23K1310024-01

Drive Chain Replacement

BENH23K23106009

NOTE

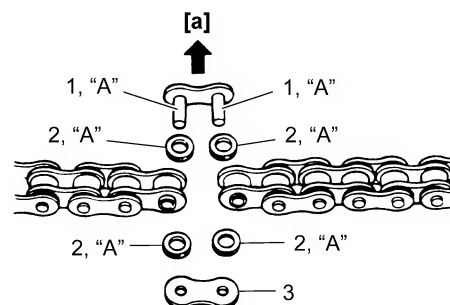
The drive chain equipped on new motorcycles is an endless type, but chains supplied as replacement part are a joint type.

- 1) Remove the swingarm assembly. (Page 2C-3)
- 2) Remove the engine sprocket. (Page 3A-4)
- 3) Remove the drive chain from the motorcycle.
- 4) Install the swingarm and rear wheel and tighten rear axle nut temporary.
- 5) Install the engine sprocket. (Page 3A-4)

- 6) Engage a new drive chain onto the sprockets.
- 7) Apply grease to new joint pins (1), new O-rings (2) and a new plate (3).

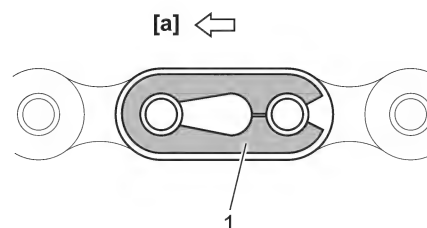
“A”: Grease 99000–25011 (SUZUKI SUPER GREASE A)

- 8) Connect both ends of the drive chain with the joint pins inserted from the wheel side [a].



IF34J1310026-02

- 9) Install a new drive chain joint clip (1). It should be attached in the way that the slit end faces opposite to the direction of the chain travel [a].



IF34J1310027-01

- 10) Adjust the drive chain slack. (Page 3A-2)
- 11) Install engine sprocket cover. (Page 3A-4)

Specifications

Tightening Torque Specifications

BENH23K23107001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Rear axle nut	54	5.5	40.0	(Page 3A-3)
Engine sprocket bolt	10	1.0	7.5	(Page 3A-4)
Engine sprocket cover bolt	4.0	0.41	2.95	(Page 3A-5)
Rear sprocket nut	21.6	2.2	15.9	(Page 3A-5)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Drive Chain Related Components” (Page 3A-1)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K23108001

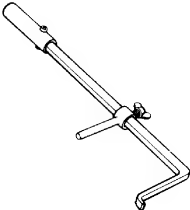
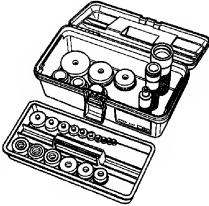
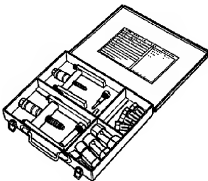
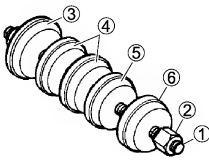
Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI SUPER GREASE A	P/No.: 99000–25011	☞ (Page 3A-6) / ☞ (Page 3A-8) / ☞ (Page 3A-9) / ☞ (Page 3A-9)

NOTE

Required service material(s) is also described in:
“Drive Chain Related Components” (Page 3A-1)

Special Tool

BENH23K23108002

09913–50121 Oil seal remover ☞ (Page 3A-8) 	09913–70210 Bearing installer set ☞ (Page 3A-8) / ☞ (Page 3A-8) 
09921–20240 Bearing remover set ☞ (Page 3A-8) 	09924–84510 Bearing installer set ☞ (Page 3A-8) 

Section 4

Brakes

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Precautions

Precautions

Precautions for Brake System

BENH23K24000001

Refer to "General Precautions" in Section 00 (Page 00-1), "Precautions for Electrical Circuit Service" in Section 00 (Page 00-2) and "Precautions for Circuit Tester" in Section 00 (Page 00-7).

Brake Fluid Information

BENH23K24000002

⚠ WARNING

- This brake system is filled with an ethylene glycol-based DOT 3 or DOT 4 brake fluid. Do not use or mix different types of fluid, such as silicone-based or petroleum-based.
- Do not use any brake fluid taken from old, used or unsealed containers. Never reuse brake fluid left over from the last servicing or which has been stored for a long period of time.
- When storing brake fluid, seal the container completely and keep it away from children.
- When replenishing brake fluid, take care not to get dust into the fluid.
- When washing brake components, use new brake fluid. Never use cleaning solvent.
- A contaminated brake disc or brake pad reduces braking performance. Discard contaminated pads and clean the disc with high quality brake cleaner or neutral detergent.
- After removal and installation of the brake caliper, master cylinder, brake hose and ABS control unit/HU (if equipped), be sure to carry out the air bleeding operation.
- Brake hose seal washers should be replaced with the new ones to prevent fluid leakage.

NOTICE

The brake fluid is damaging to painted surfaces, plastics and rubber materials, and do not allow the fluid to spill on the surrounding parts.

If the fluid is spilled, flush it with water immediately.

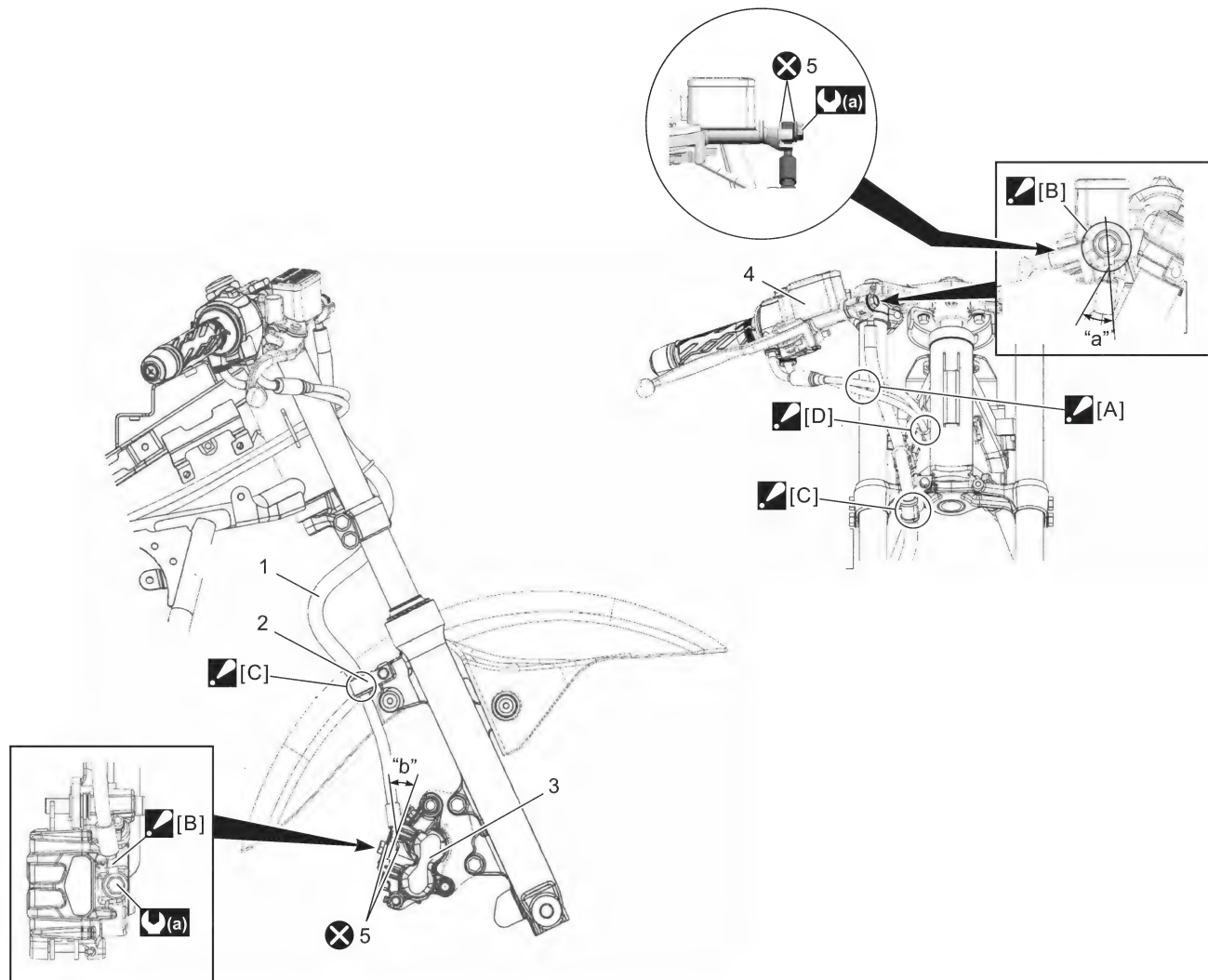
Brake Control System and Diagnosis

Schematic and Routing Diagram

Front Brake Hose Routing Diagram

GSX R 150 Model

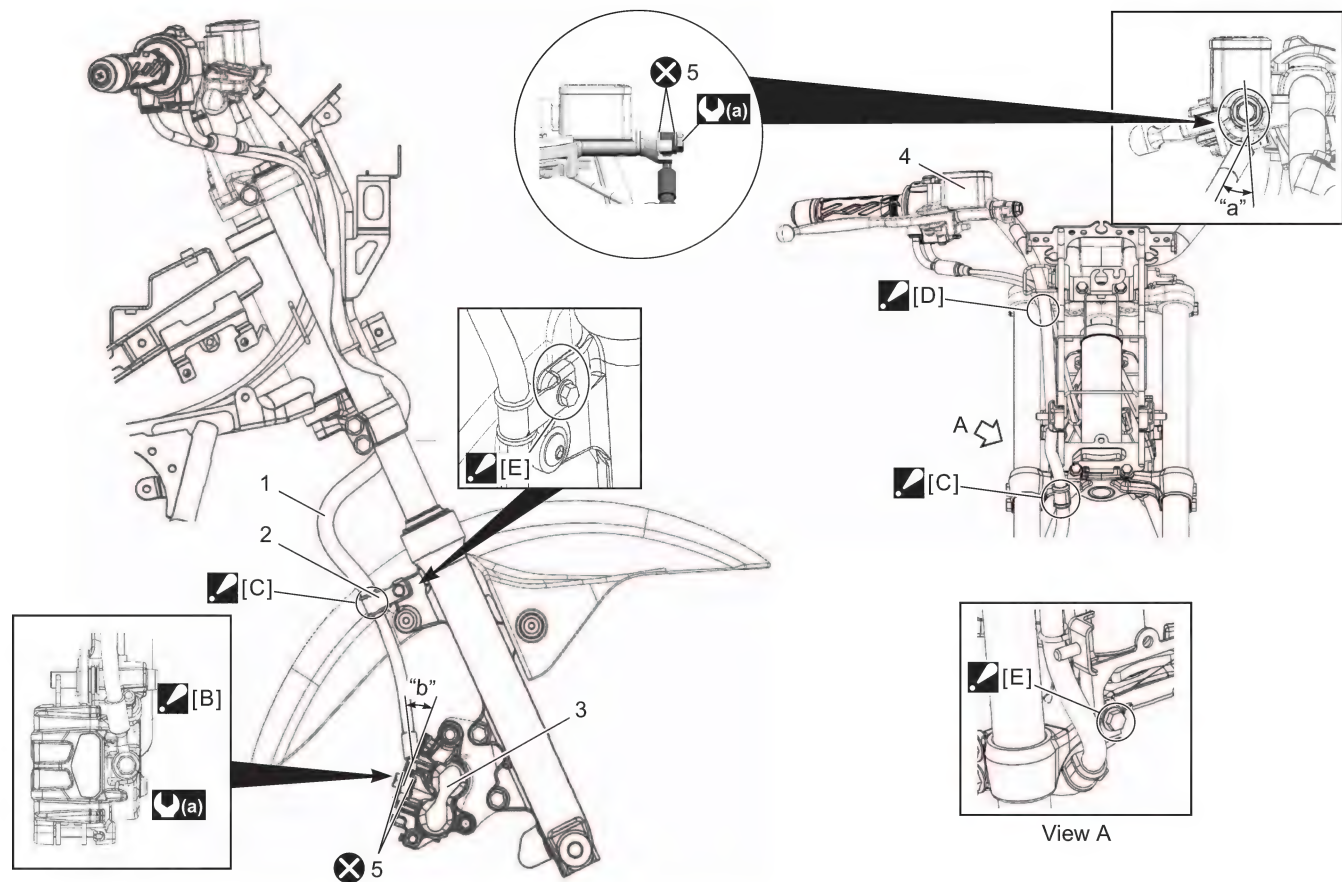
BENH23K24102001



IH23K1410040-01

<div></div> [A]: Pass the brake hose in rear of the throttle cable.	4. Front master cylinder
<div></div> [B]: After the brake hose union has contacted the stopper, tighten the union bolt to the specified torque.	5. Seal washer
<div></div> [C]: Fix the hose sleeve to the clamp firmly.	"a": 14°
<div></div> [D]: Assemble the brake hose firmly.	"b": 28°
1. Front brake hose	<div></div> (a) : 23 N·m (2.3 kgf·m, 17.0 lbf·ft)
2. Front brake hose lower clamp	<div></div> : Do not reuse.
3. Front caliper	

GSX S 150 Model

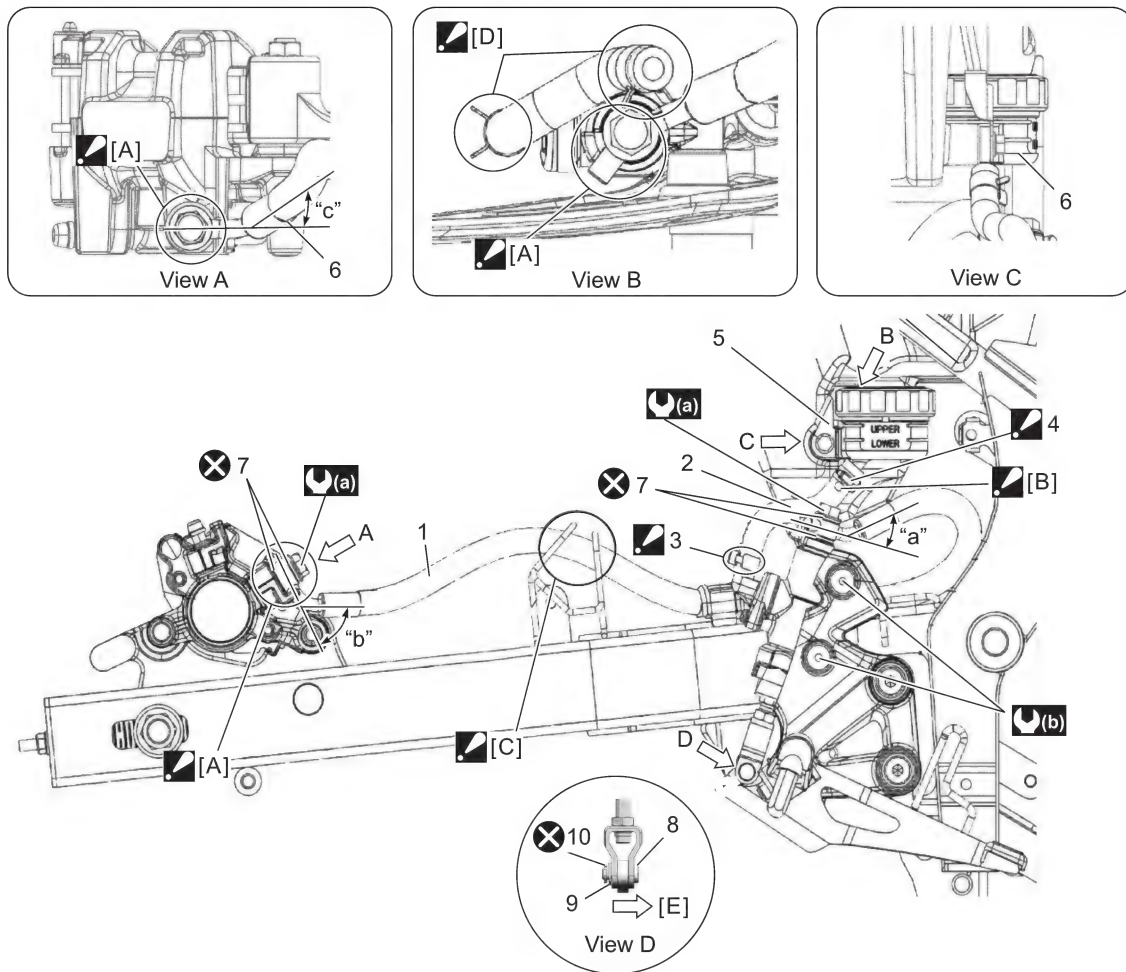


IH23K2410001-02

✓ [A]: Pass the brake hose in rear of the throttle cable.	3. Front caliper
✓ [B]: After the brake hose union has contacted the stopper, tighten the union bolt to the specified torque.	4. Front master cylinder
✓ [C]: Fix the hose sleeve to the clamp firmly.	5. Seal washer
✓ [D]: Assemble the brake hose front of throttle cable.	"a": 14°
✓ [E]: After the clamp has contacted the stopper, tighten the bolt to the specified torque.	"b": 28°
1. Front brake hose	⚙️(a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
2. Front brake hose lower clamp	⊗ : Do not reuse.

Rear Brake Hose Routing Diagram

BENH23K24102002



IH23K1410041-01

<div> [A]: After the brake hose union has contacted the stopper, tighten the union bolt to the specified torque. </div>	7. Seal washer
<div> [B]: Insert reservoir hose with white paint to outside. </div>	8. Rear master pin
<div> [C]: Pass the brake hose into the guide. </div>	9. Rear master washer
<div> [D]: Assemble clip as shown </div>	10. Rear master cylinder cotter pin
[E]: Outside	"a": 42°
1. Rear brake hose	"b": 56°
2. Reservoir tank hose	"c": 35°
<div> 3. Hose clamp (Master cylinder side) : Hose clamp ends should face front side. </div>	<div> (a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft) </div>
<div> 4. Hose clamp (Reservoir tank side) : Hose clamp ends should face as shown in the figure. </div>	<div> (b) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft) </div>
5. Reservoir tank cap guard	<div> : Do not reuse. </div>
6. Reservoir tank	

Diagnostic Information and Procedures

Brake Symptom Diagnosis

BENH23K24104001

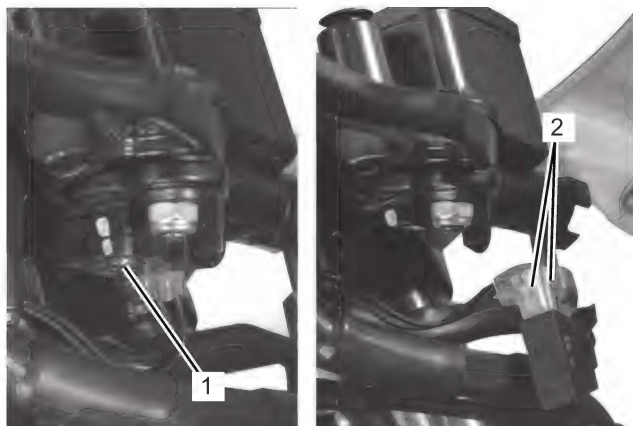
Condition	Possible cause	Correction / Reference Item
Insufficient brake power	Leakage of brake fluid from hydraulic system.	Repair or replace.
	Worn pads and/or disc.	Replace. <ul style="list-style-type: none"> • Pad <ul style="list-style-type: none"> – Front: (Page 4B-2) – Rear: (Page 4C-2) • Disc <ul style="list-style-type: none"> – Front: (Page 4B-8) – Rear: (Page 4C-6)
	Oil adhesion on friction surface of pads.	Clean disc and pads.
	Air in hydraulic system.	Bleed air. (Page 4A-8)
	Not enough brake fluid in the reservoir.	Replenish. (Page 4A-6)
Brake squeaking	Carbon adhesion on pad surface.	Repair surface with sandpaper.
	Tilted pad.	Correct pad fitting or replace. <ul style="list-style-type: none"> • Front: (Page 4B-2) • Rear: (Page 4C-2)
	Damaged wheel bearing.	Replace. <ul style="list-style-type: none"> • Front: (Page 2D-4) • Rear: (Page 2D-7)
	Loose front wheel axle or rear wheel axle.	Tighten to specified torque. (Page 0B-3)
	Worn pads and/or disc.	Replace. <ul style="list-style-type: none"> • Pad <ul style="list-style-type: none"> – Front: (Page 4B-2) – Rear: (Page 4C-2) • Disc <ul style="list-style-type: none"> – Front: (Page 4B-8) – Rear: (Page 4C-6)
	Foreign material in brake fluid.	Replace brake fluid. (Page 4A-11)
	Clogged return port of master cylinder.	Disassemble and clean master cylinder.
Excessive brake lever stroke	Air in hydraulic system.	Bleed air. (Page 4A-8)
	Insufficient brake fluid.	Replenish fluid to specified level. (Page 4A-6)
	Improper quality of brake fluid.	Replace with correct fluid. (Page 4A-11)
Leakage of brake fluid	Insufficient tightening of connection joints.	Tighten to specified torque. (Page 0B-3)
	Cracked hose.	Replace. <ul style="list-style-type: none"> • Front: (Page 4A-12) • Rear: (Page 4A-13)
	Worn master cylinder piston and/or cup.	Replace master cylinder piston and/or cup. <ul style="list-style-type: none"> • Front: (Page 4A-16) • Rear: (Page 4A-21)
	Worn brake caliper piston seal and dust seal.	Replace brake caliper piston seal and dust seal. <ul style="list-style-type: none"> • Front: (Page 4B-4) • Rear: (Page 4C-3)
Brake drags	Rusty part.	Clean and lubricate. (Page 0B-8)
	Insufficient front brake lever or rear brake pedal pivot lubrication.	Lubricate. (Page 0B-8)

Repair Instructions

Front Brake Light Switch Inspection

BENH23K24106001

- 1) Grasp the front brake lever, and then remove the front brake light switch (1).
- 2) Disconnect the front brake light switch lead wire coupler (2).



IH23K1410001-02

- 3) Inspect the switch for continuity with a circuit tester. If any abnormality is found, replace the front brake light switch with a new one.

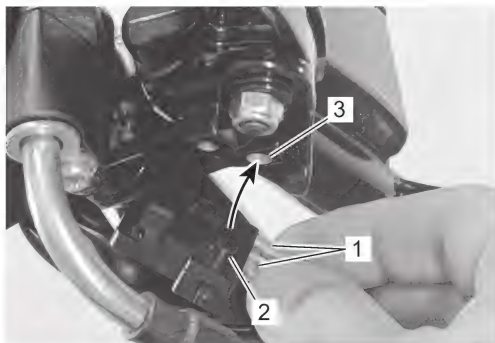
Position \ Terminal	Terminal	Terminal
OFF		
ON	○	○

IG12K1410002-01

- 4) Connect the front brake light switch lead wire coupler (1).
- 5) When installing the brake light switch, align the projection (2) on the switch with the hole (3) in the master cylinder.
- 6) Tighten the brake light switch screw to the specified torque.

Tightening torque

Brake light switch screw: 1.2 N·m (0.12 kgf-m, 0.90 lbf-ft)

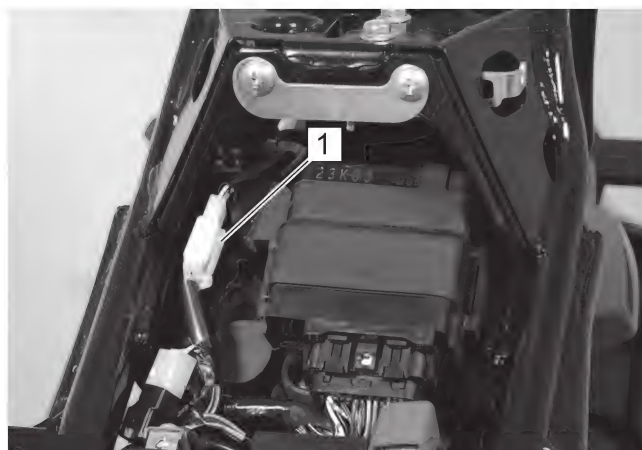


IG12K1410005-01

Rear Brake Light Switch Inspection

BENH23K24106002

- 1) Open the front box lid.
- 2) Remove the following parts.
 - a) Under cowling: (Page 9D-25)
 - b) Front box: (Page 9D-28)
 - c) Right frame cover and right frame front cover: (Page 9D-30)
- 3) Disconnect the rear brake light switch lead wire coupler (1).



IH23K1410002-01

- 4) Inspect the switch for continuity with a tester. If any abnormality is found, replace the rear brake light switch with a new one.

Color \ Position	Terminal (O)	Terminal (W/B)
OFF		
ON	○	○

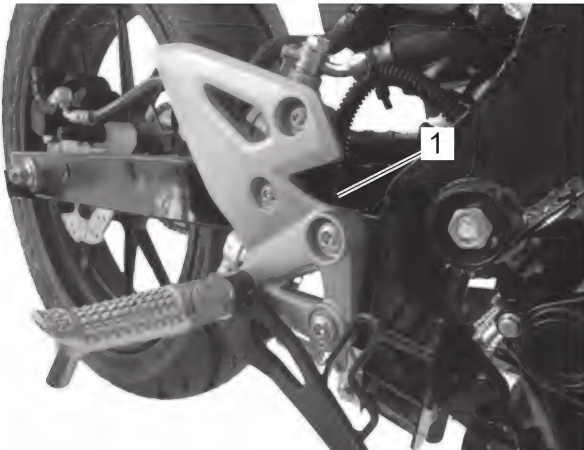
IF04K1410008-01

- 5) Connect the rear brake light switch lead wire coupler.
- 6) Install the removed parts.

Rear Brake Light Switch Inspection and Adjustment

BENH23K24106003

Check the rear brake light switch so that the brake light will come on just before pressure is felt when the brake pedal is depressed. If the brake light switch adjustment is necessary, turn the adjuster nut (1) in or out while holding the brake pedal.



IH23K1410042-01

Brake Fluid Level Check

BENH23K24106004

- 1) Keep the motorcycle upright and place the handlebars straight.
- 2) Check the brake fluid level by observing the lower limit lines (1) on the front and rear brake fluid reservoirs. When the brake fluid level is below the lower limit line, inspect for brake pad wear and leaks and replenish with brake fluid that meets the following specification.

Brake fluid (DOT 3)

Brake fluid (DOT 4)



IG12K1410008-01



IH23K1410003-02

Brake Hose Inspection

BENH23K24106005

GSX R 150 Model

- 1) Inspect the brake hoses and hose joints for crack, damage or brake fluid leakage. If any defects are found, replace the brake hose with a new one.

- Front: (Page 4A-12)
- Rear: (Page 4A-13)



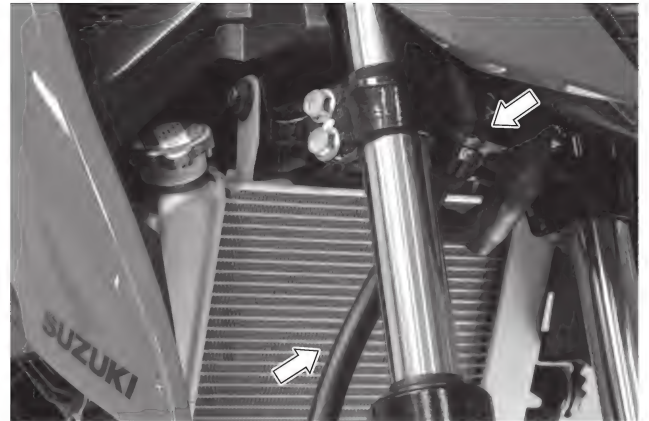
IH23K1410004-01



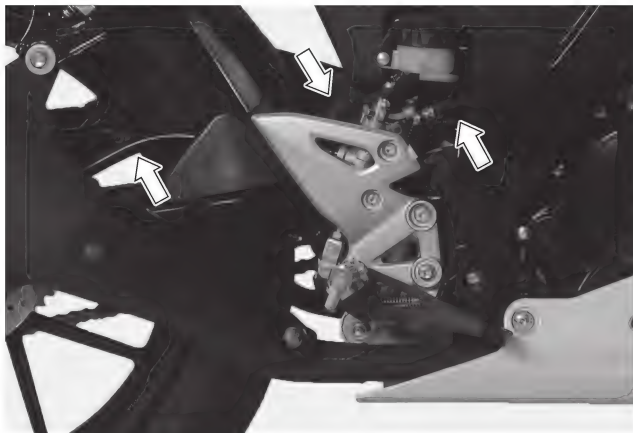
IH23K1410006-02



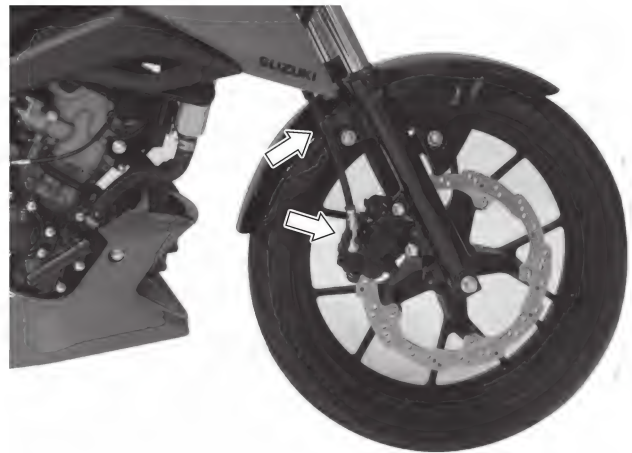
IH23K1410005-02



IH23K2410003-01





IH23K1410007-01



IH23K2410004-01

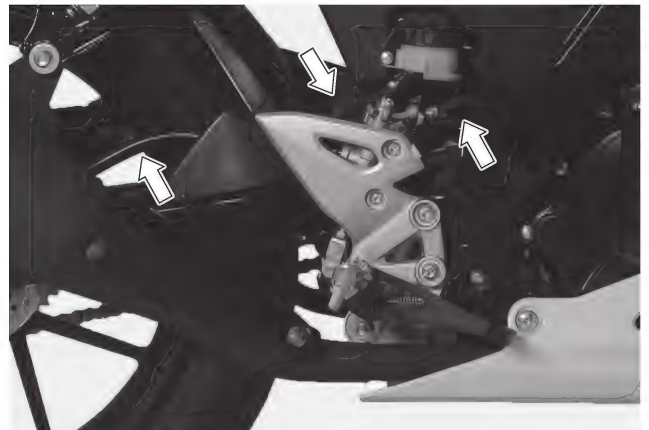
GSX S 150 Model

1) Inspect the brake hoses and hose joints for crack, damage or brake fluid leakage. If any defects are found, replace the brake hose with a new one.

- Front:  (Page 4A-12)
- Rear:  (Page 4A-13)



IH23K2410002-01



IH23K1410007-01

2) Install the removed parts.

Brake Pedal Height Inspection and Adjustment

BENH23K24106006

- 1) Inspect the brake pedal height "a" between the pedal top face and footrest.
Adjust the brake pedal height if necessary.

Brake pedal height

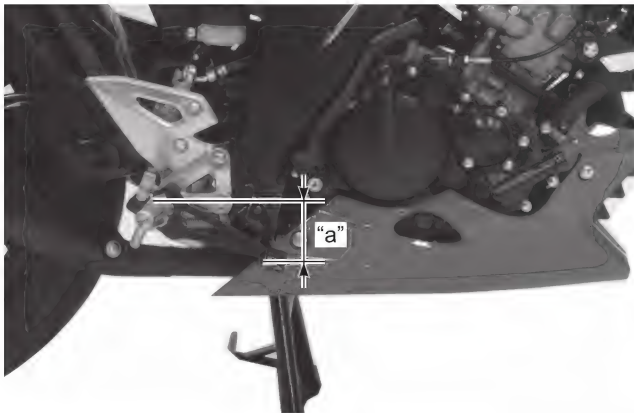
[Standard]: 16.4 – 26.4 mm (0.65 – 1.03 in)

GSX R 150 Model



IH23K1410008-02

GSX S 150 Model

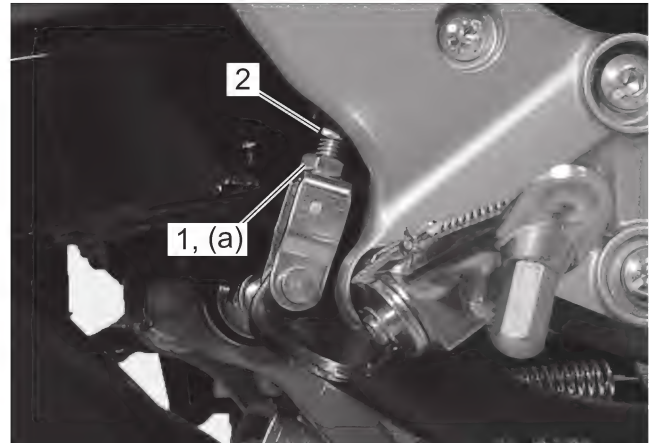


IH23K2410005-01

- 2) Loosen the lock-nut (1).
- 3) Turn the push rod (2) in or out until the brake pedal height is within the specification.
- 4) Tighten the lock-nut to the specified torque.

Tightening torque

Rear brake master cylinder rod lock-nut (a): 18 N·m (1.8 kgf-m, 13.5 lbf-ft)



IH23K1410009-01

- 5) After finishing the brake pedal height inspection and adjustment, check the rear brake light switch.
☞ (Page 4A-6)

Air Bleeding from Brake Line

BENH23K24106007

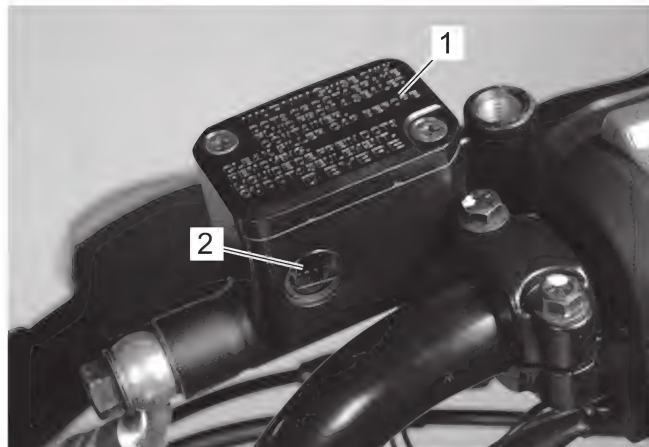
Trapped air in the brake lines acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus greatly reduces the braking force. The presence of air bubbles is indicated by a "spongy" feel in the brake lever and low braking force. This condition is extremely dangerous, and therefore the air must be bled every time after replacing any parts in the brake lines in the following manner.

Front Brake

- 1) Place the motorcycle on a level surface and keep the handlebars straight.
- 2) Remove the reservoir cap (1), plate and diaphragm.
- 3) Fill the master cylinder reservoir with new brake fluid to the top of the inspection window (2). Place the reservoir cap to prevent dirt from entering.

Brake fluid (DOT 3)

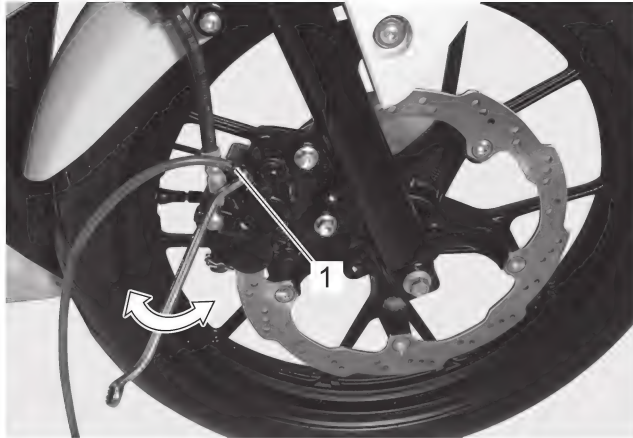
Brake fluid (DOT 4)



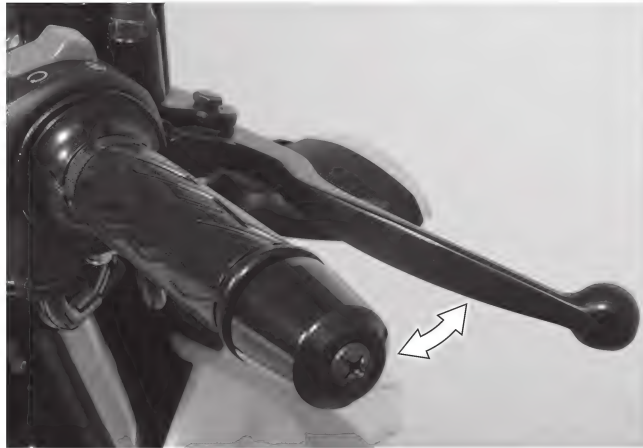
IH23K1410010-01

- 4) Remove the bleeder valve cap and attach a clear hose to the air bleeder valve, and insert the free end of the hose into a receptacle.

- 5) Operate the brake lever several times and, while holding the lever gripped, loosen the air bleeder valve (1) and drain the brake fluid into a receptacle.



IH23K1410011-01



IH23K1410012-01

- 6) Tighten the air bleeder valve and release the brake lever slowly.
7) Repeat the steps 5) and 6) until the fluid is flowing out without bubbles.

NOTE

While bleeding the brake system, replenish the reservoir with the brake fluid as necessary to keep the fluid above the lower level.

- 8) Tighten the air bleeder valve to the specified torque.

Tightening torque

Front brake air bleeder valve: 7.5 N·m (0.76 kgf-m, 5.55 lbf-ft)

- 9) Fill the reservoir with brake fluid to the line "a".

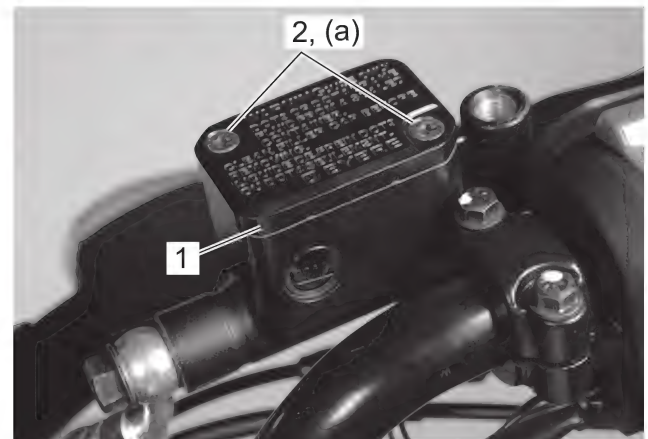


IH23K1410013-01

- 10) Install the diaphragm, plate and reservoir cap (1).
11) Tighten the reservoir cap screws (2) to the specified torque.

Tightening torque

Front reservoir cap screw (a): 1.5 N·m (0.15 kgf-m, 1.10 lbf-ft)



IH23K1410014-01

Rear Brake

- 1) Place the motorcycle on a level surface.
2) Remove the reservoir tank bracket bolt (1) and move the reservoir tank outside of the frame.

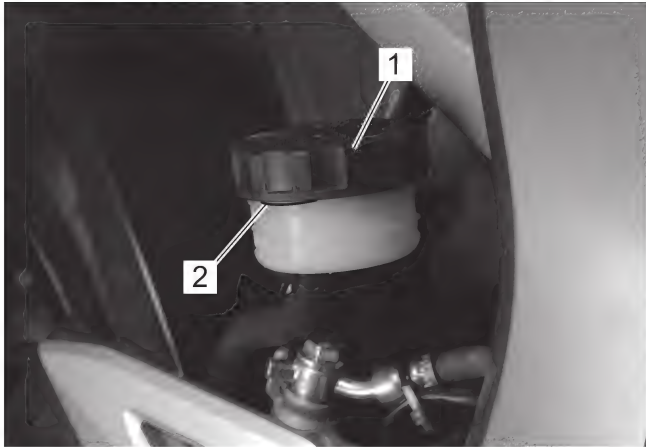


IH23K1410015-04

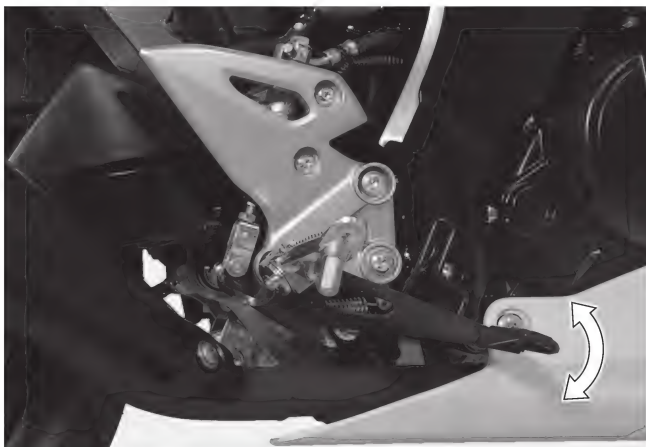
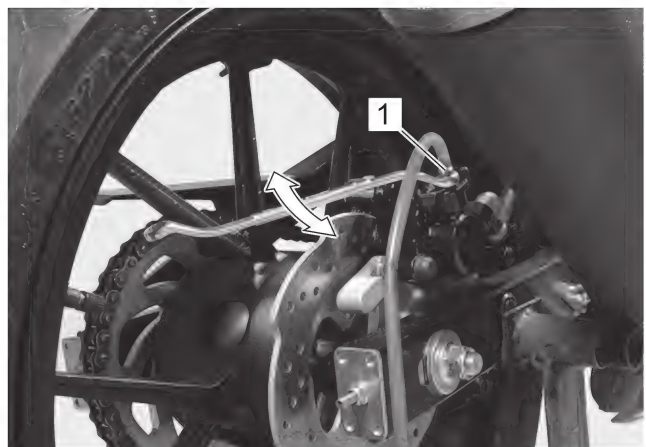
- 3) Remove the reservoir cap (1), ring and diaphragm.

4A-10 Brake Control System and Diagnosis:

- 4) Fill the reservoir with brake fluid up to the upper level (2) of the reservoir. Place the reservoir cap to prevent dirt from entering.



- 5) Remove the bleeder valve cap and attach a clear hose to the air bleeder valve, and insert the free end of the hose into a receptacle.
- 6) Operate the brake pedal several times and, while pushing the pedal, loosen the air bleeder valve (1) and drain the brake fluid into a receptacle.



- 7) Tighten the air bleeder valve and release the brake pedal slowly.

- 8) Repeat the steps 6) and 7) until the fluid is flowing out without bubbles.

NOTE

While bleeding the brake system, replenish the reservoir with the brake fluid as necessary to keep the fluid above the lower level.

- 9) Tighten the air bleeder valve to the specified torque.

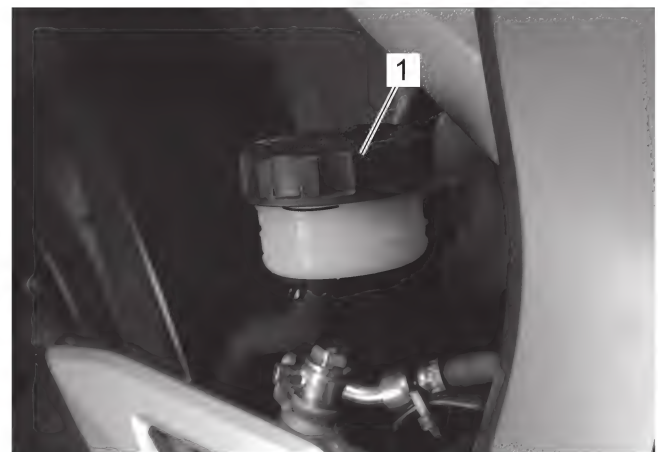
Tightening torque

Rear brake air bleeder valve: 7.5 N·m (0.76 kgf-m, 5.55 lbf-ft)

- 10) Fill the reservoir with brake fluid to the upper level (1) of the reservoir.



- 11) Install the diaphragm, ring and reservoir cap (1).



- 12) Install the reservoir tank. Refer to "Rear Brake Hose Routing Diagram" (Page 4A-3).
- 13) Install the removed parts.

Brake Fluid Replacement

BENH23K24106008

Front Brake

- 1) Place the motorcycle on a level surface and keep the handlebars straight.
- 2) Remove the brake fluid reservoir cap, plate and diaphragm.
- 3) Suck up the old brake fluid as much as possible.



IH23K1410021-01

- 4) Fill the reservoir with new brake fluid.

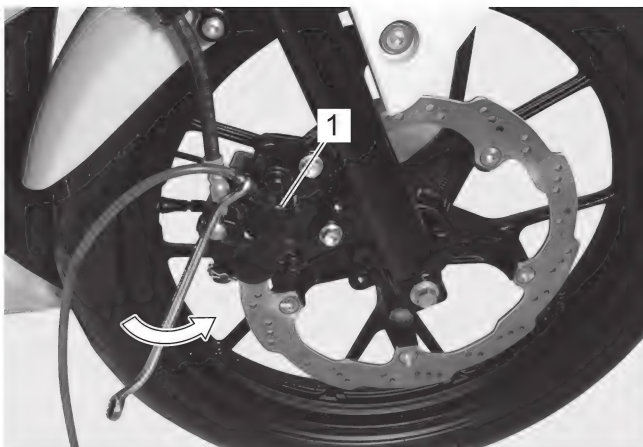
Brake fluid (DOT 3)

Brake fluid (DOT 4)

- 5) Remove the bleeder valve cap and attach a clear hose to the air bleeder valve (1), and insert the free end of the hose into a receptacle.
- 6) Loosen the air bleeder valve, squeeze and release the brake lever and drain the old brake fluid out of the brake system.

NOTE

When replacing the brake system, replenish the reservoir with the brake fluid as necessary to keep the fluid above the lower level.



IH23K1410022-01



IH23K1410023-01

- 7) Bleed the air from the front brake system. (Page 4A-8)

Rear Brake

- 1) Place the motorcycle on a level surface.
- 2) Remove the reservoir tank bracket bolt (1) and move the reservoir tank outside of the frame.



IH23K1410015-04

- 3) Remove the brake fluid reservoir cap, ring and diaphragm.
- 4) Suck up the old brake fluid as much as possible.



IH23K1410024-01

4A-12 Brake Control System and Diagnosis:

- 5) Fill the reservoir with new brake fluid.

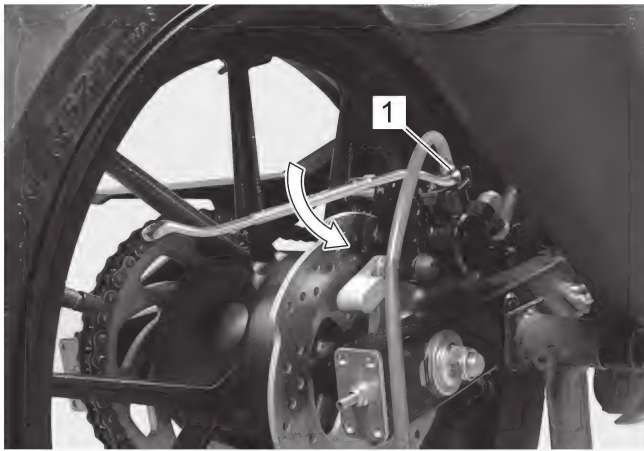
Brake fluid (DOT 3)

Brake fluid (DOT 4)

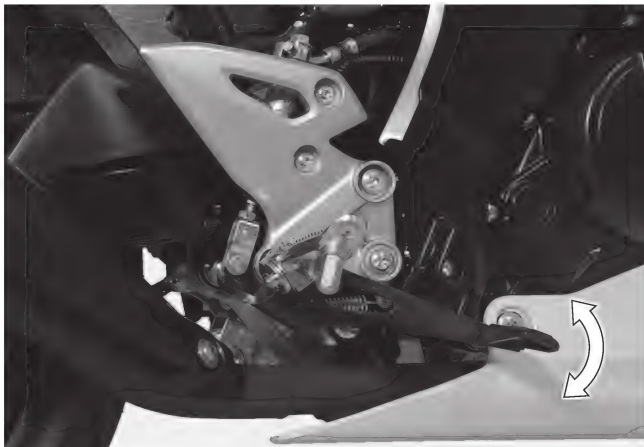
- 6) Remove the bleeder valve cap and attach a clear hose to the air bleeder valve (1) and insert the free end of the hose into a receptacle.
- 7) Loosen the air bleeder valve and pump the brake pedal until the old brake fluid flows out of the brake system.

NOTE

When replacing the brake system, replenish the reservoir with the brake fluid as necessary to keep the fluid above the lower level.



IH23K1410025-01



IH23K1410018-02

- 8) Bleed the air from the rear brake system. (Page 4A-8)

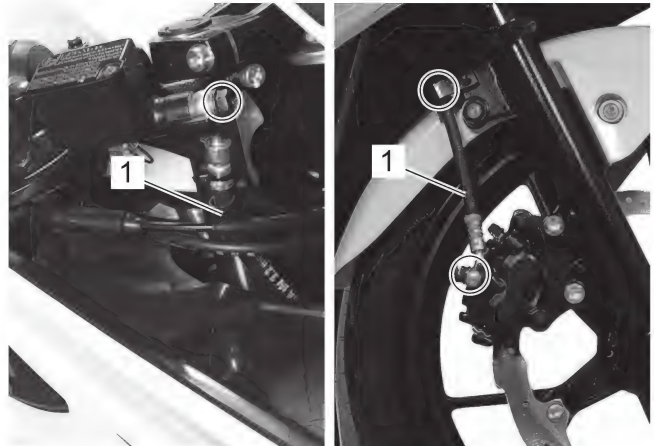
Front Brake Hose Removal and Installation

BENH23K24106009

Refer to "Front Brake Hose Routing Diagram" (Page 4A-1).

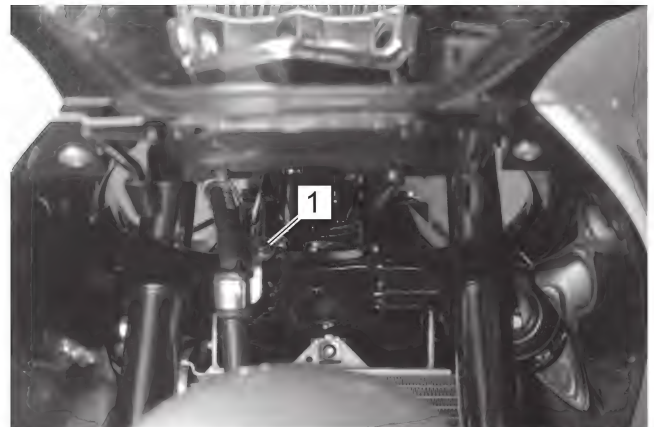
Removal

- 1) Drain brake fluid. (Page 4A-11)
- 2) Remove the front brake hose (1).



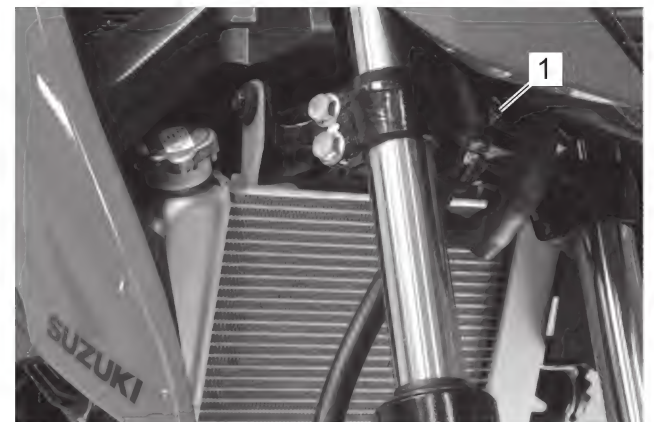
IH23K1410026-01

GSX R 150 Model



IH23K1410027-02

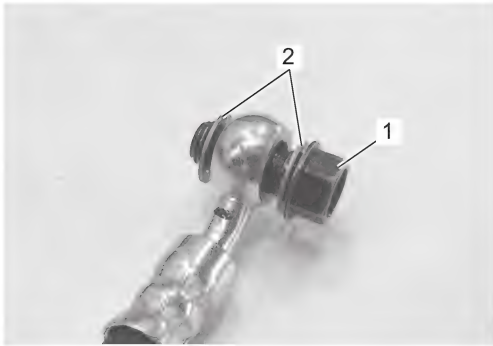
GSX S 150 Model



IH23K2410006-01

Installation

- 1) Install the brake hose union bolt (1) and new seal washers (2) to the brake hose.

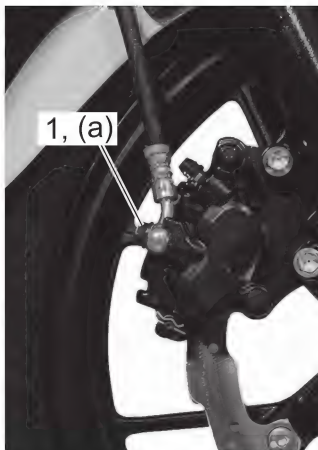


IG12K1410070-01

- 2) Install the front brake hose. Refer to "Front Brake Hose Routing Diagram" (Page 4A-1).
- 3) Tighten the union bolt (1) to the specified torque.

Tightening torque

Brake hose union bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K1410028-01

- 4) Bleed air from the front brake system. (Page 4A-8)

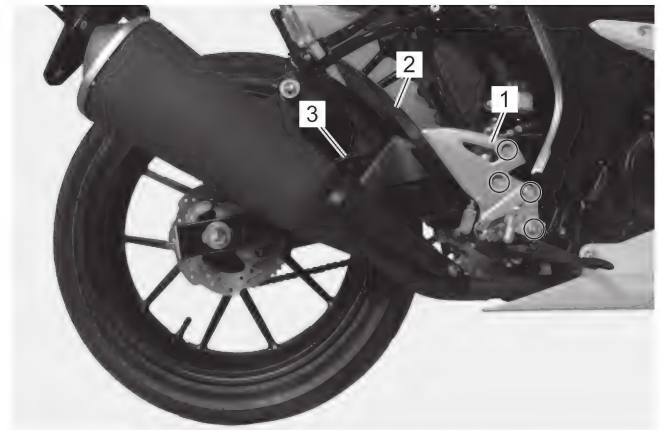
Rear Brake Hose Removal and Installation

BENH23K24106010

Refer to "Rear Brake Hose Routing Diagram" (Page 4A-3).

Removal

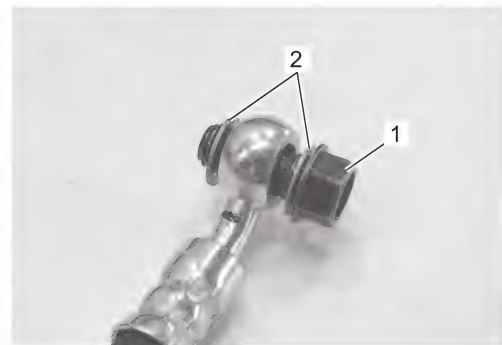
- 1) Drain brake fluid. (Page 4A-11)
- 2) Remove the right front footrest guard (1), chain case (2), and then remove the rear brake hose (3).



IH23K1410029-02

Installation

- 1) Install the brake hose union bolt (1) and new seal washers (2) to the brake hose.

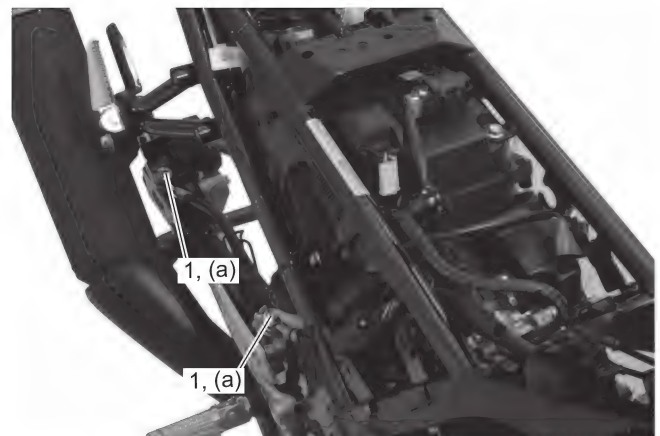


IG12K1410070-01

- 2) Install the rear brake hose. Refer to "Rear Brake Hose Routing Diagram" (Page 4A-3).
- 3) Tighten the union bolt (1) to the specified torque.

Tightening torque

Brake hose union bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

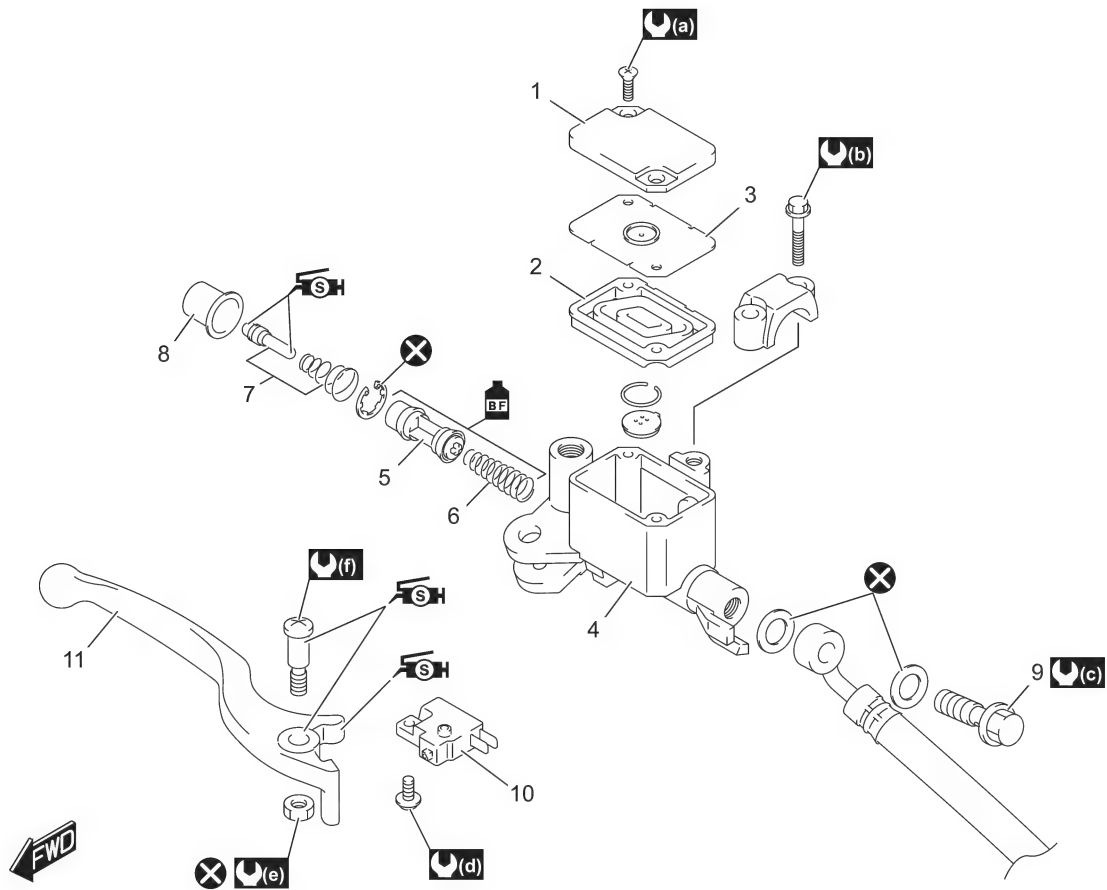


IH23K1410030-02










- 4) Bleed air from the rear brake system. (Page 4A-8)
- 5) Install the right front footrest guard.

Front Brake Master Cylinder Assembly / Brake Lever Components

BENH23K24106011



IG12K1410029-06

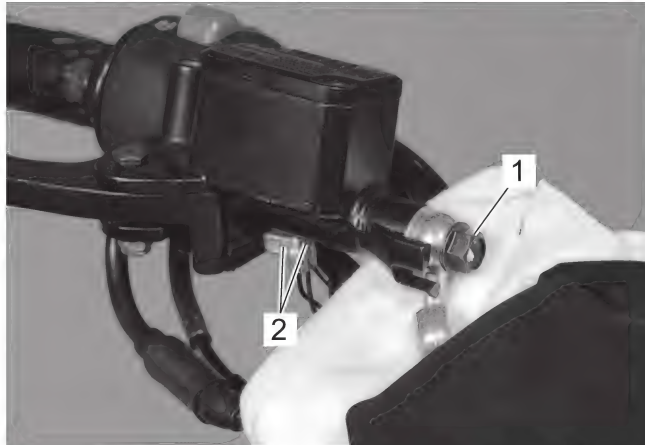
1. Reservoir cap	8. Dust boot	 : 1.2 N·m (0.12 kgf-m, 0.90 lbf-ft)
2. Plate	9. Brake hose union bolt	 : 6.0 N·m (0.61 kgf-m, 4.45 lbf-ft)
3. Diaphragm	10. Brake light switch	 : 1.0 N·m (0.10 kgf-m, 0.75 lbf-ft)
4. Master cylinder	11. Brake lever	 : Apply silicone grease.
5. Piston/Cup set	 : 1.5 N·m (0.15 kgf-m, 1.10 lbf-ft)	 : Apply brake fluid.
6. Return spring	 : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)	 : Do not reuse.
7. Push rod	 : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	

Front Brake Master Cylinder Assembly Removal and Installation

BENH23K24106012

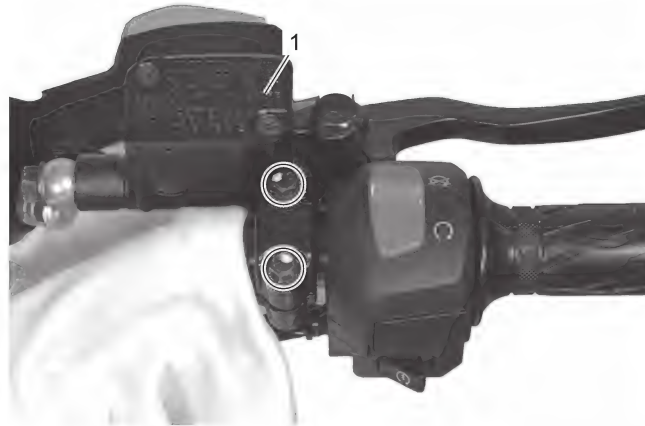
Removal

- 1) Drain brake fluid. (Page 4A-11)
- 2) Place a clean rag underneath the brake hose union bolt (1) on the master cylinder to catch any spilt brake fluid.
- 3) Remove the brake hose union bolt and disconnect the brake hose.
- 4) Disconnect the front brake light switch lead wire couplers (2).



IH23K1410031-01

- 5) Remove the master cylinder bolt and remove the master cylinder assembly (1).



IH23K1410032-01

Installation

Install the front brake master cylinder in the reverse order of removal. Pay attention to the following points:

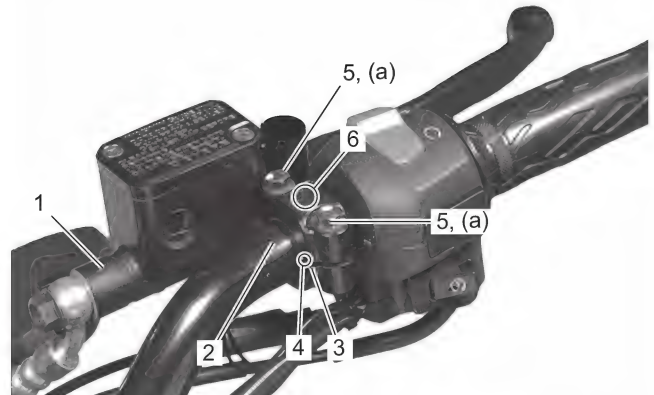
- When installing the master cylinder assembly (1) onto the right handlebar (2), align the edge (3) of master cylinder body with the punch mark (4) on the right handlebar and tighten the front bolt (5) first.

NOTE

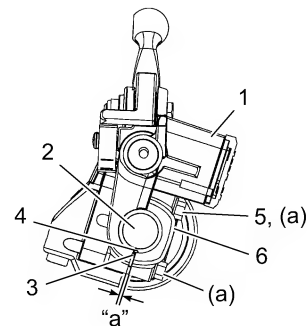
Face the triangle mark (6) forward.

Tightening torque

Front brake master cylinder holder bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IH23K1410033-01



IG12K1410034-02

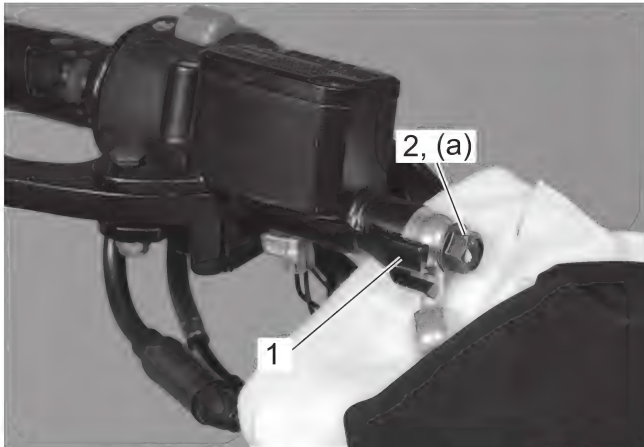
"a": Clearance

4A-16 Brake Control System and Diagnosis:

- Install the brake hose union bolt and new seal washers to brake hose.
- After the brake hose union has contacted the stopper (1), tighten the union bolt (2) to the specified torque.

Tightening torque

Brake hose union bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K1410034-01

- Bleed air from the brake system. (Page 4A-8)

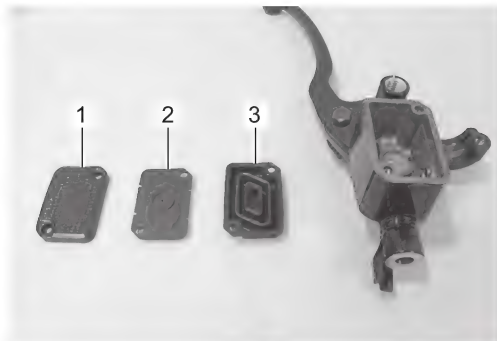
Front Brake Master Cylinder Assembly / Brake Lever Disassembly and Reassembly

BENH23K24106013

Refer to "Front Brake Master Cylinder Assembly Removal and Installation" (Page 4A-15).

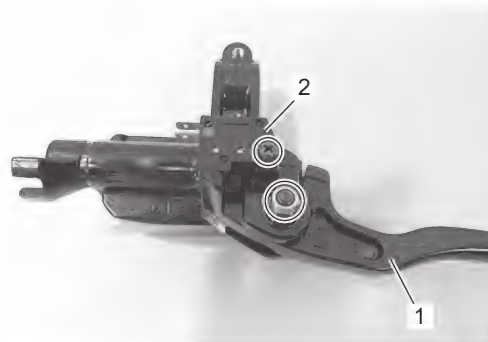
Disassembly

- 1) Remove the reservoir cap (1), plate (2) and diaphragm (3).



IG12K1410037-01

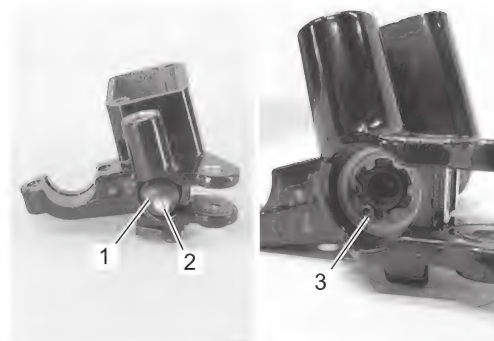
- 2) Remove the brake lever (1) and brake light switch (2).



IG12K1410038-01

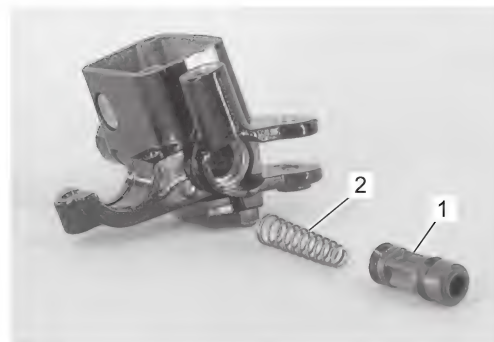
- 3) Remove the dust boot (1) and push rod (2).
- 4) Remove the snap ring (3) with the special tool.

Special tool
09900-06108



IG12K1410039-01

- 5) Remove the following parts from the master cylinder.
 - Piston/cup set (1)
 - Return spring (2)



IG12K1410040-01

Reassembly

Reassemble the front brake master cylinder and brake lever in the reverse order of disassembly. Pay attention to the following points:

NOTICE

- Wash the master cylinder components with new brake fluid before reassembly.
- Do not wipe the brake fluid off after washing the components.
- When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosene, etc.
- Apply brake fluid to the master cylinder bore and all of the master cylinder components to be inserted into the bore.

Brake fluid (DOT 3)

Brake fluid (DOT 4)



I837H1410034-01

- Install a new snap ring (1) with the special tool.

Special tool
09900-06108

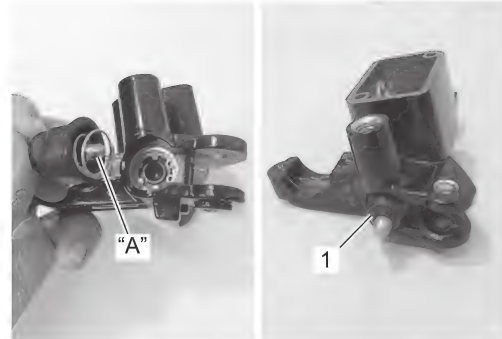


IG12K1410041-01

- Apply grease to the contact point between push rod and piston/cap set.

"A": Grease 99000-25100 (SUZUKI SILICONE GREASE)

- Set the dust boot (1) to the master cylinder securely.

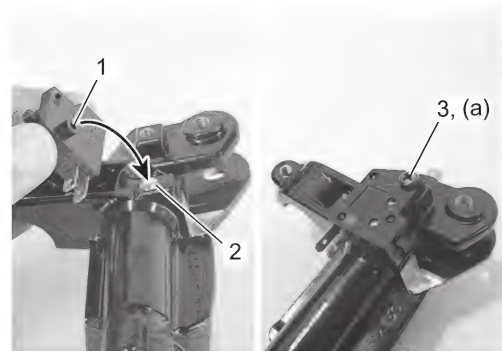


IG12K1410042-01

- When installing the brake light switch, align the projection (1) on the switch with the hole (2) in the master cylinder.
- Tighten the brake light switch mounting screw (3) to the specified torque.

Tightening torque

Brake light switch screw (a): 1.2 N·m (0.12 kgf-m, 0.90 lbf-ft)

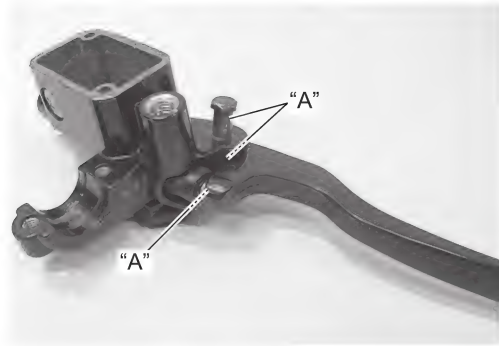


IG12K1410043-01

4A-18 Brake Control System and Diagnosis:

- Apply grease to the contact point between push rod and brake lever.
- Apply grease to the brake lever pivot bolt and brake lever sliding surfaces.

“A”: Grease 99000–25100 (SUZUKI SILICONE GREASE)



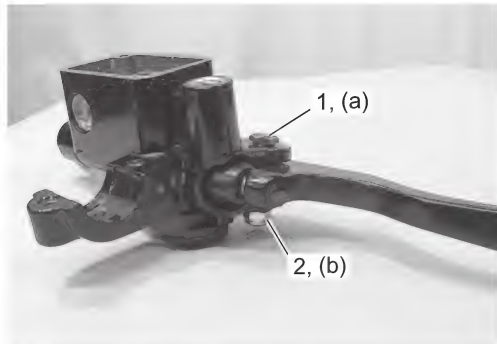
IG12K1410044-01

- Tighten the pivot bolt (1) and new lock-nut (2) to the specified torque.

Tightening torque

Brake lever pivot bolt (a): 1.0 N·m (0.10 kgf-m, 0.75 lbf-ft)

Brake lever pivot bolt lock-nut (b): 6.0 N·m (0.61 kgf-m, 4.45 lbf-ft)



IG12K1410045-01

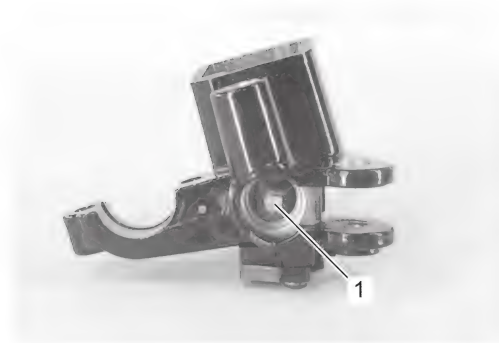
Front Brake Master Cylinder Parts Inspection

BENH23K24106014

Refer to “Front Brake Master Cylinder Assembly / Brake Lever Disassembly and Reassembly” (Page 4A-16).

Master Cylinder

Inspect the master cylinder bore (1) for any scratches corrosion or other damage. If any damage is found, replace it with a new one.



IG12K1410046-01

Piston / Cup Set

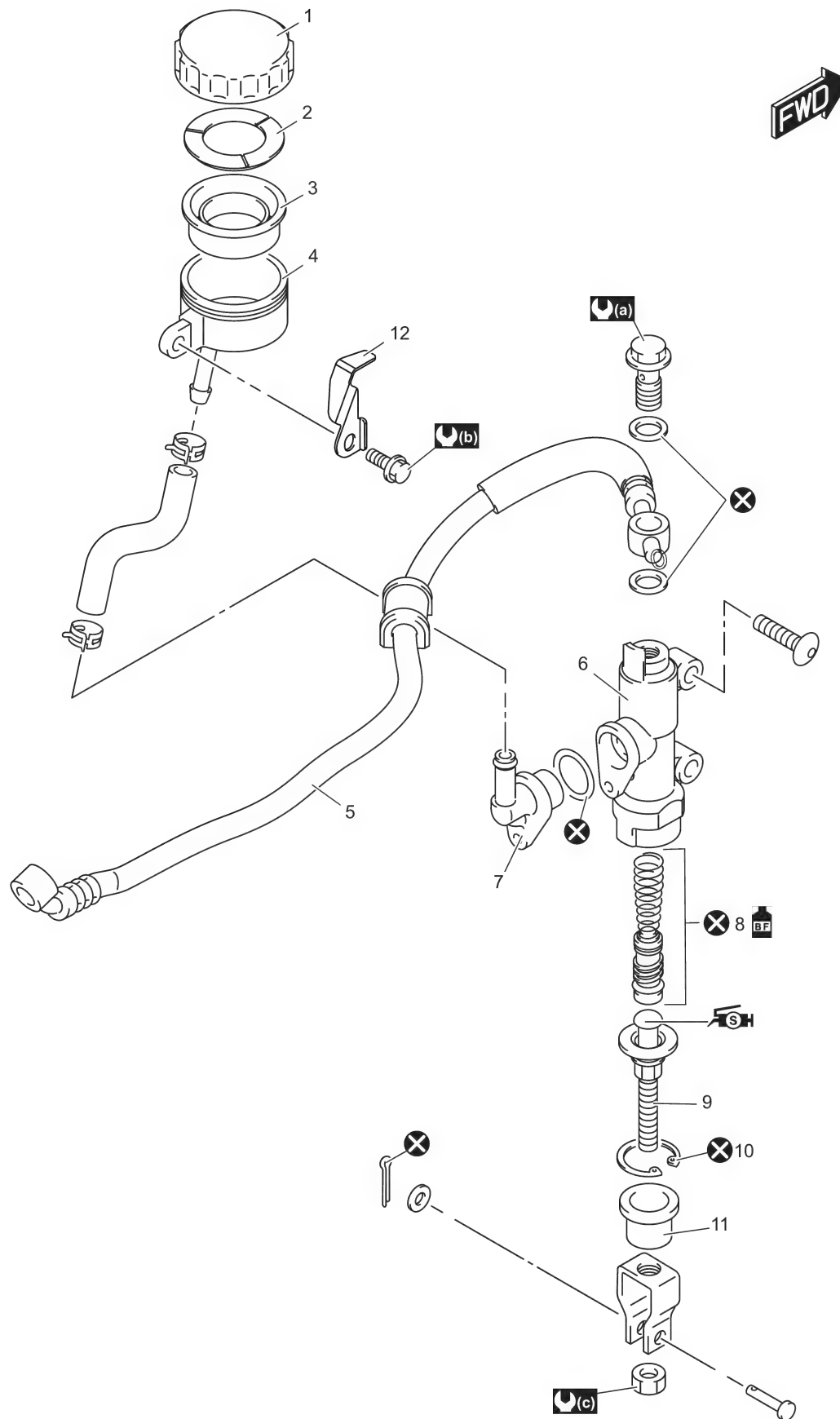
Inspect the piston/cup set surface for any scratches or other damage. Inspect the primary cup (1) and secondary cup (2) for wear or damage. If any damage is found, replace the piston/cup with new one.



IG12K1410047-01

Rear Brake Master Cylinder Assembly Components

BENH23K24106015



IH23K1410035-01

4A-20 Brake Control System and Diagnosis:

1. Reservoir cap	7. Brake hose connector	(a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
2. Ring	8. Piston/Cup set	(b) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
3. Diaphragm	9. Push rod	(c) : 18 N·m (1.8 kgf-m, 13.5 lbf-ft)
4. Reservoir tank	10. Snap ring	: Apply silicone grease.
5. Brake hose	11. Dust boot	: Apply brake fluid.
6. Master cylinder	12. Reservoir tank cap guard	: Do not reuse.

Rear Brake Master Cylinder Assembly Removal and Installation

BENH23K24106016

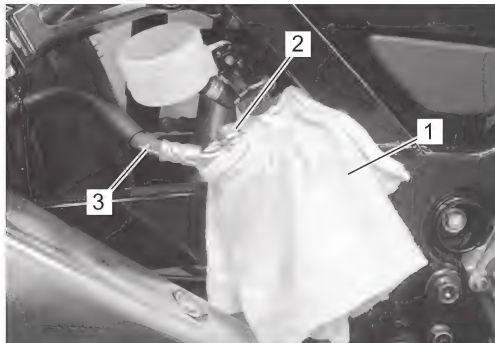
Removal

- 1) Drain brake fluid. (Page 4A-11)
- 2) Remove the right front footrest guard (1).
- 3) Remove the reservoir tank bracket bolt (2).



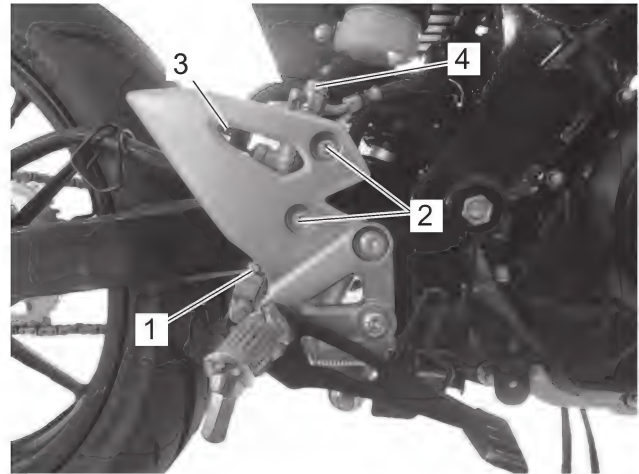
IH23K1410015-04

- 4) Place a clean rag (1) underneath the brake hose union bolt (2) on the master cylinder to catch any spilt brake fluid.
- 5) Remove the brake hose union bolt and disconnect the brake hose (3).



IG12K1410068-02

- 6) Loosen the lock-nut (1).
- 7) Remove the master cylinder mounting bolts (2) and hose clamp (3).
- 8) Remove the master cylinder with the reservoir (4).



IH23K1410043-01

Installation

Install the rear brake master cylinder in the reverse order of removal. Pay attention to the following points:

- Install hose clamp (1) and tighten the master cylinder mounting bolts (2) to the specified torque.

Tightening torque

Rear brake master cylinder mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

- Tighten the lock-nut (3) to the specified torque.

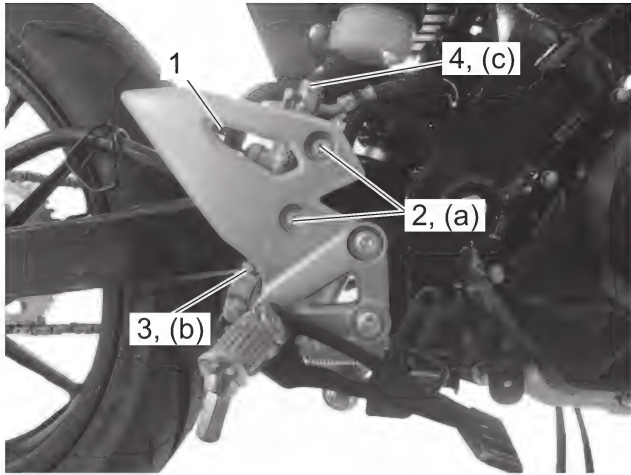
Tightening torque

Rear brake master cylinder rod lock-nut (b): 18 N·m (1.8 kgf-m, 13.5 lbf-ft)

- Install the brake hose union bolt and new seal washers to the brake hose.
- After the brake hose union has contacted the stopper, tighten the union bolt (4) to the specified torque.

Tightening torque

Brake hose union bolt (c): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K1410044-01

- Install the reservoir tank. Refer to “Rear Brake Hose Routing Diagram” (Page 4A-3).
- Bleed air from the system after installing the master cylinder. (Page 4A-8)
- Adjust the brake pedal height. (Page 4A-8)

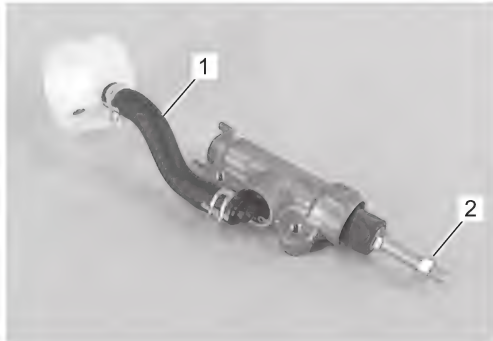
Rear Brake Master Cylinder Disassembly and Reassembly

BENH23K24106017

Refer to “Rear Brake Master Cylinder Assembly Removal and Installation” (Page 4A-20).

Disassembly

- 1) Disconnect the reservoir hose (1).
- 2) Remove the lock-nut (2).

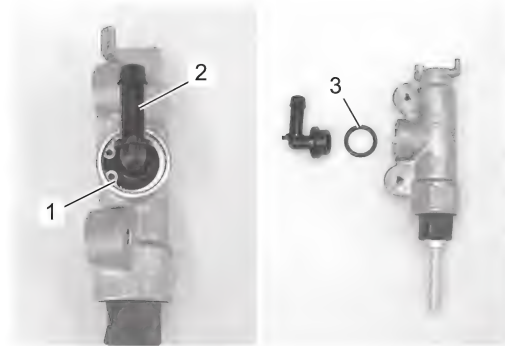


IG12K1410052-01

- 3) Remove the snap ring (1) with the special tool.

Special tool
09900-06108

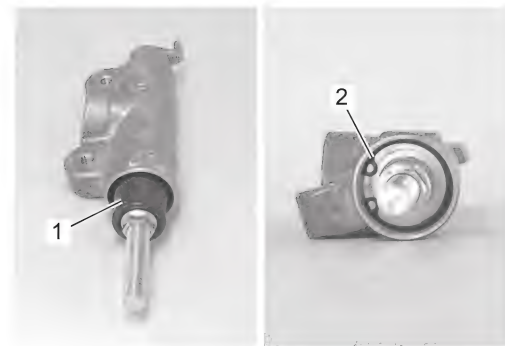
- 4) Remove the brake hose connector (2) and O-ring (3).



IG12K1410053-01

- 5) Pull out the dust boot (1) and remove the snap ring (2).

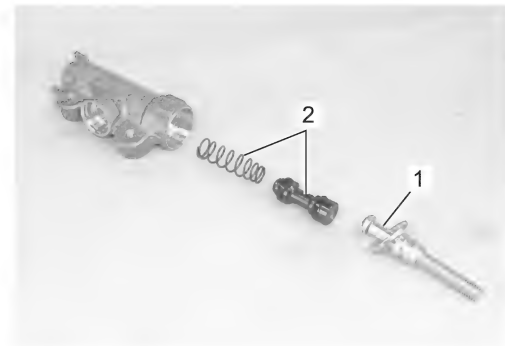
Special tool
09900-06108



IG12K1410054-01

- 6) Remove the following parts from the master cylinder.

- Push rod (1)
- Piston/cup set (2)



IG12K1410055-01

4A-22 Brake Control System and Diagnosis:

Reassembly

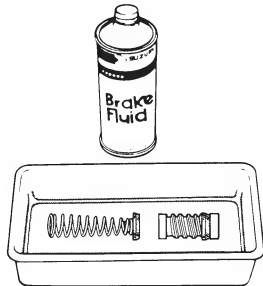
Reassemble the rear brake master cylinder in the reverse order of disassembly. Pay attention to the following points:

NOTICE

- Wash the master cylinder components with new brake fluid before reassembly.
- Do not wipe the brake fluid off after washing the components.
- When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosene, etc.
- Apply brake fluid to the master cylinder bore and all of the master cylinder components to be inserted into the bore.

Brake fluid (DOT 3)

Brake fluid (DOT 4)



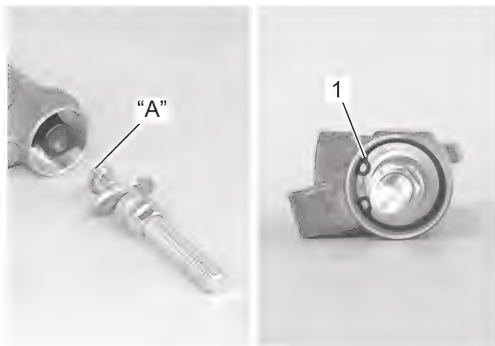
IB14J1410051-02

- Apply grease to the push rod end.

"A": Grease 99000-25100 (SUZUKI SILICONE GREASE)

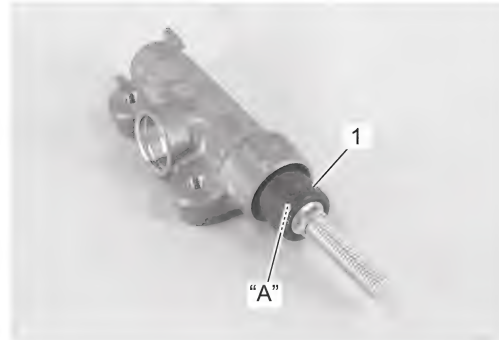
- Install a new snap ring (1) with the special tool.

Special tool
09900-06108



IG12K1410056-01

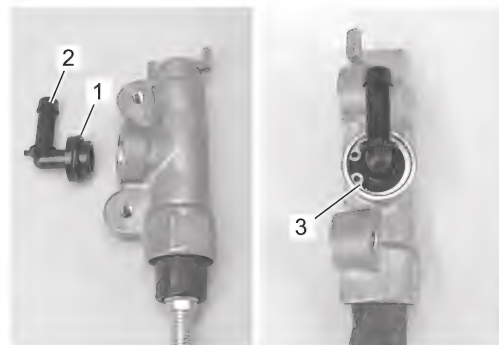
- Apply grease to the lip of the dust boot (1).
- "A": Grease 99000-25100 (SUZUKI SILICONE GREASE)**
- Set the dust boot to the master cylinder securely.



IG12K1410057-02

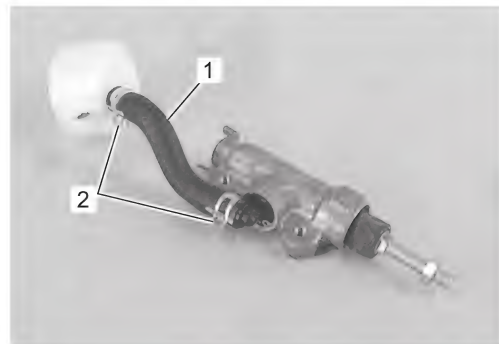
- Install a new O-ring (1) to the brake hose connector (2).
- Install a new snap ring (3) with the special tool.

Special tool
09900-06108



IG12K1410058-01

- Connect the reservoir hose (1) and set the clamps (2).
☞ (Page 4A-3)



IG12K1410059-01

Rear Brake Master Cylinder Parts Inspection

BENH23K24106018

Refer to "Rear Brake Master Cylinder Disassembly and Reassembly" (Page 4A-21).

Master Cylinder

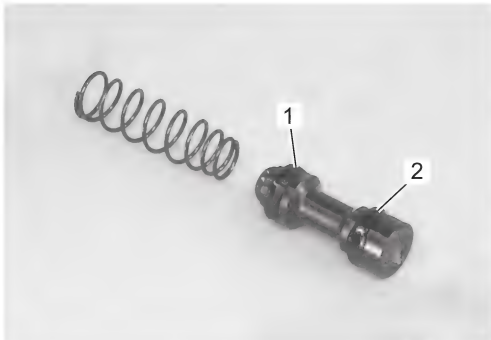
Inspect the master cylinder bore (1) for any scratches or other damage. If any damage is found, replace the master cylinder with a new one.



IG12K1410060-01

Piston / Cup Set

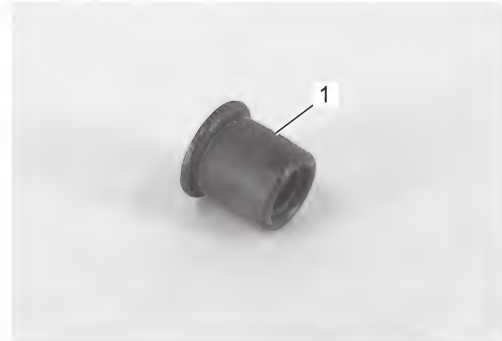
Inspect the piston surface for any scratches or other damage. Inspect the primary cup (1) and secondary cup (2) for wear or damage. If any damage is found, replace the piston/cup with new ones.



IG12K1410061-01

Dust Boot

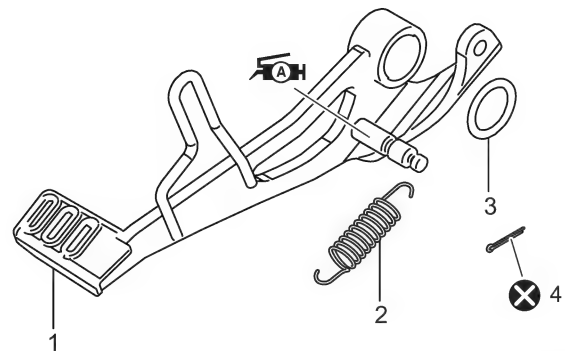
Inspect the dust boot (1) for wear or damage. If any defects are found, replace it with a new one.





IG12K1410062-01

Rear Brake Pedal Components

BENH23K24106019



IH23K1410036-01

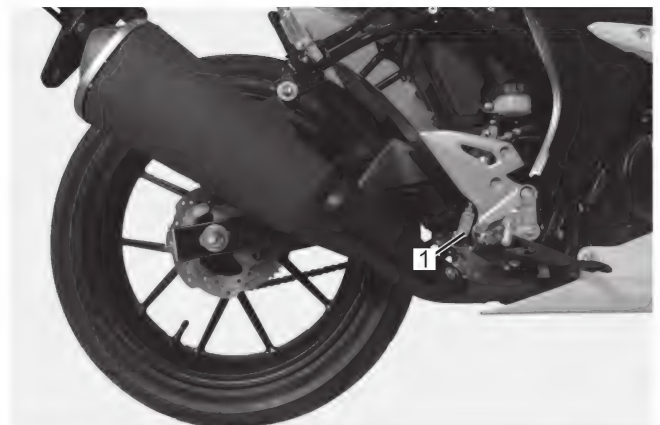
1. Rear brake pedal	4. Cotter pin
2. Rear brake pedal return spring	 AH : Apply grease.
3. Washer	 : Do not reuse.

Rear Brake Pedal Removal and Installation

BENH23K24106020

Removal

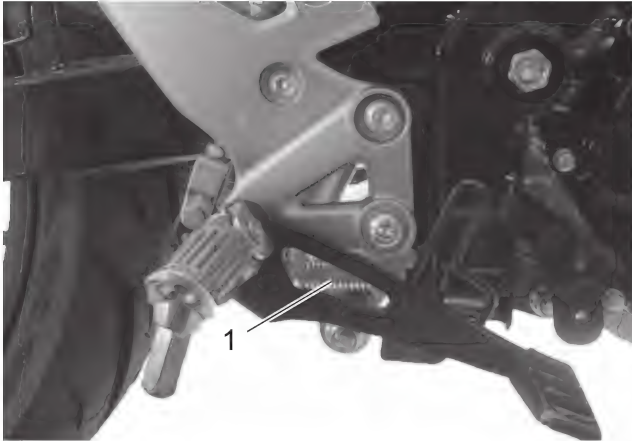
- 1) Remove the cotter pin and remove the rear brake master cylinder pin (1).



IH23K1410037-02

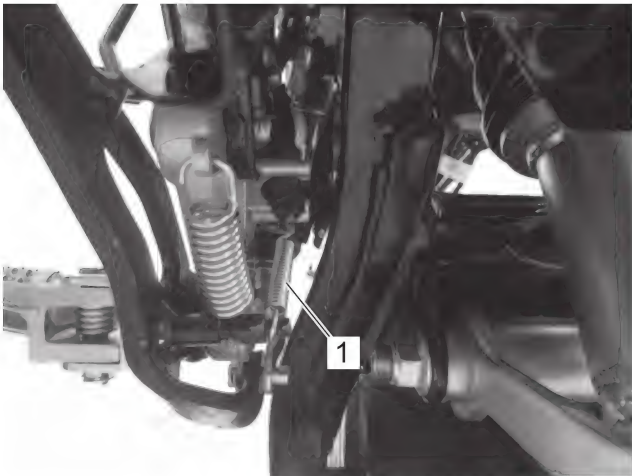
4A-24 Brake Control System and Diagnosis:

- 2) Remove the rear brake pedal return spring (1).



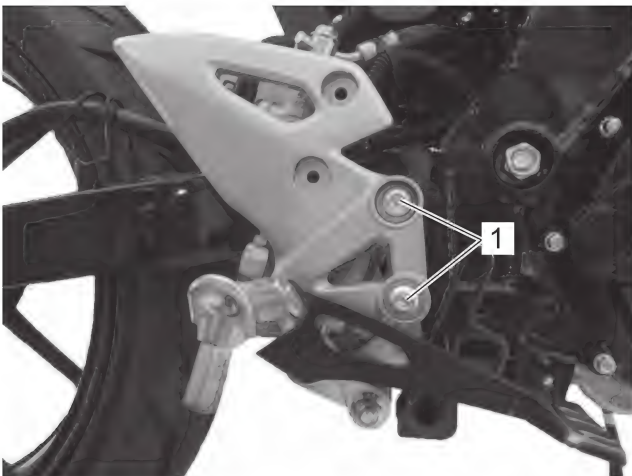
IH23K1410045-01

- 3) Remove the rear brake light switch spring (1).



IH23K1410046-01

- 4) Remove footrest bracket bolt (1).



IH23K1410047-01

- 5) Remove footrest bolt (1) and then remove brake pedal while pull footrest to outside.



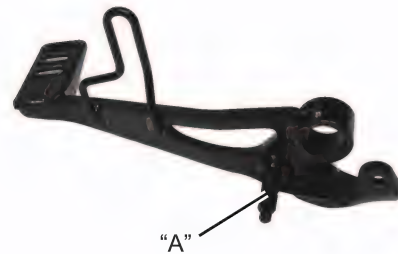
IH23K1410048-01

Installation

Install the rear brake pedal in the reverse order of removal. Pay attention to the following points:

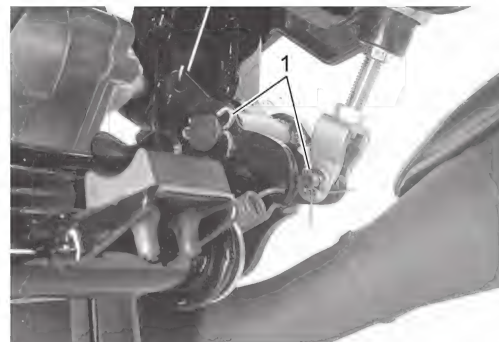
- Apply grease to the rear brake pedal shaft.

“A”: Grease 99000-25011 (SUZUKI SUPER GREASE A)



IH23K1410038-01

- Use new cotter pins (1).



IG12K1410075-01



IH23K1410049-01

Rear Brake Pedal Inspection

BENH23K24106021

Refer to "Rear Brake Pedal Removal and Installation" (Page 4A-23).

Inspect the brake pedal for wear and damage. If any defect is found, replace rear brake pedal with new ones.



IH23K1410039-01

Specifications

Tightening Torque Specifications

BENH23K24107001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Brake light switch screw	1.2	0.12	0.90	(Page 4A-5) / (Page 4A-17)
Rear brake master cylinder rod lock-nut	18	1.8	13.5	(Page 4A-8) / (Page 4A-20)
Front brake air bleeder valve	7.5	0.76	5.55	(Page 4A-9)
Front reservoir cap screw	1.5	0.15	1.10	(Page 4A-9)
Rear brake air bleeder valve	7.5	0.76	5.55	(Page 4A-10)
Brake hose union bolt	23	2.3	17.0	(Page 4A-13) / (Page 4A-13) / (Page 4A-16) / (Page 4A-20)
Front brake master cylinder holder bolt	10	1.0	7.5	(Page 4A-15)
Brake lever pivot bolt	1.0	0.10	0.75	(Page 4A-18)
Brake lever pivot bolt lock-nut	6.0	0.61	4.45	(Page 4A-18)
Rear brake master cylinder mounting bolt	10	1.0	7.5	(Page 4A-20)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

"Front Brake Hose Routing Diagram" (Page 4A-1)

"Rear Brake Hose Routing Diagram" (Page 4A-3)

"Front Brake Master Cylinder Assembly / Brake Lever Components" (Page 4A-14)

"Rear Brake Master Cylinder Assembly Components" (Page 4A-19)

"Fasteners Information" in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K24108001

Material	SUZUKI recommended product or Specification		Note
Brake fluid	DOT 3	—	☞ (Page 4A-6) / ☞ (Page 4A-8) / ☞ (Page 4A-11) / ☞ (Page 4A-12) / ☞ (Page 4A-17) / ☞ (Page 4A-22)
	DOT 4	—	☞ (Page 4A-6) / ☞ (Page 4A-8) / ☞ (Page 4A-11) / ☞ (Page 4A-12) / ☞ (Page 4A-17) / ☞ (Page 4A-22)
Grease	SUZUKI SUPER GREASE A	P/No.: 99000-25011	☞ (Page 4A-24)
	SUZUKI SILICONE GREASE	P/No.: 99000-25100	☞ (Page 4A-17) / ☞ (Page 4A-18) / ☞ (Page 4A-22) / ☞ (Page 4A-22)

NOTE

Required service material(s) is also described in:

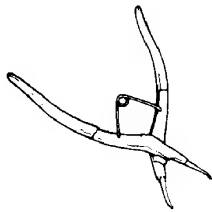
“Front Brake Master Cylinder Assembly / Brake Lever Components” (Page 4A-14)

“Rear Brake Master Cylinder Assembly Components” (Page 4A-19)

“Rear Brake Pedal Components” (Page 4A-23)

Special Tool

BENH23K24108002

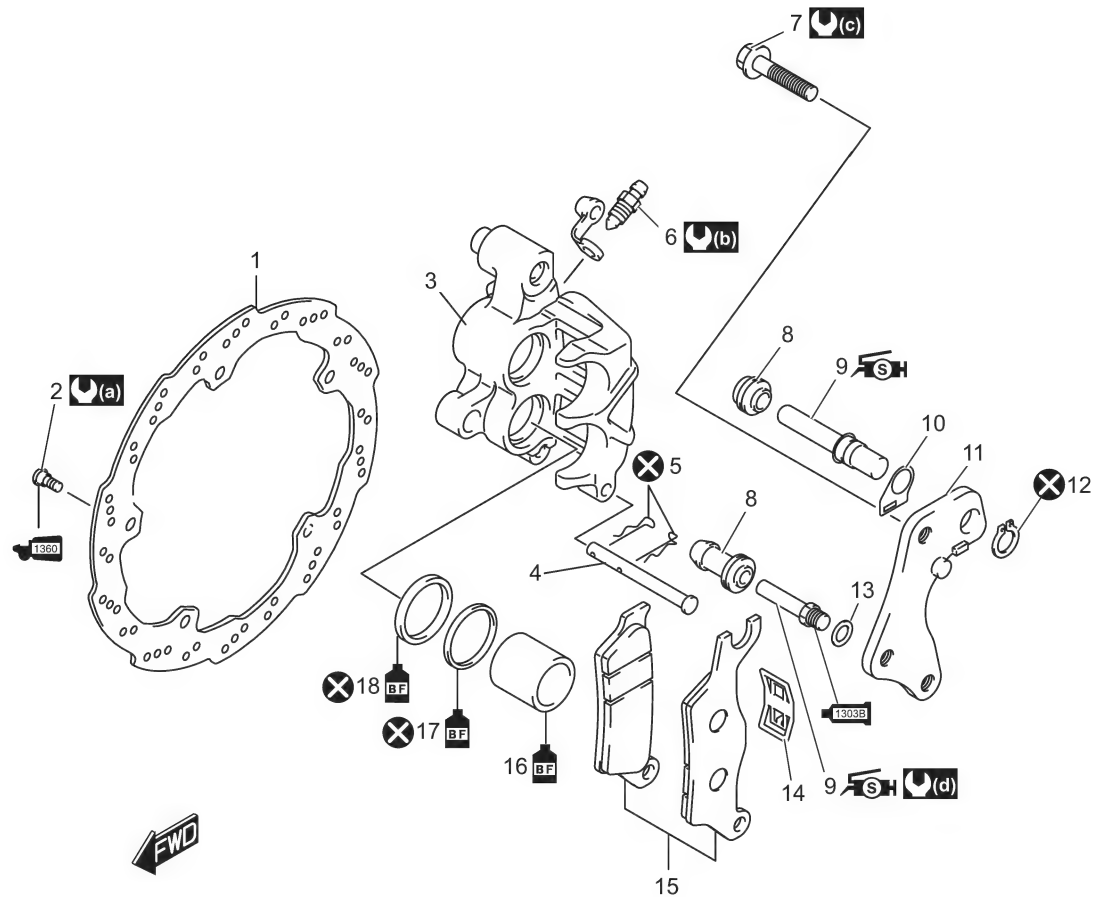
09900-06108 Snap ring pliers (Internal) ☞ (Page 4A-16) / ☞ (Page 4A-17) / ☞ (Page 4A-21) / ☞ (Page 4A-21) / ☞ (Page 4A-22) / ☞ (Page 4A-22)		
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Front Brakes










Repair Instructions

Front Brake Components

BENH23K24206001



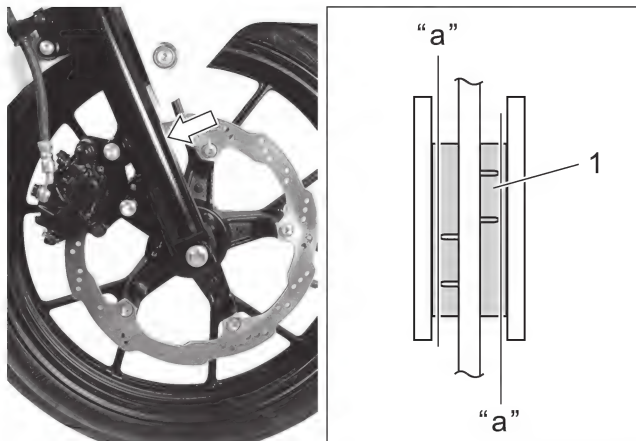
IH23K1420016-01

1. Front brake disc	10. Pad stopper	 (a) : 23 N-m (2.3 kgf-m, 17.0 lbf-ft)
2. Front brake disc bolt	11. Brake caliper bracket	 (b) : 7.5 N-m (0.76 kgf-m, 5.55 lbf-ft)
3. Front brake caliper	12. Snap ring	 (c) : 25 N-m (2.5 kgf-m, 19.0 lbf-ft)
4. Brake pad mounting pin	13. Spacer	 (d) : 8.5 N-m (0.87 kgf-m, 6.30 lbf-ft)
5. Clip	14. Brake pad spring	 : Apply silicone grease to the sliding surface.
6. Brake air bleeder valve	15. Brake pad	 (303B) : Apply thread lock to the thread part.
7. Caliper mounting bolt	16. Piston	 (1360) : Apply thread lock to the thread part.
8. Rubber boot	17. Dust seal	 BF : Apply brake fluid.
9. Brake caliper bracket pin	18. Piston seal	 X : Do not reuse.

Front Brake Pad Inspection

BENH23K24206002

The extent of brake pad (1) wear can be checked by observing the grooved limit line "a" on the pads. When the wear exceeds the grooved limit line, replace the pads with new ones. (Page 4B-2)



IH23K1420001-01

Front Brake Pad Replacement

BENH23K24206003

NOTE

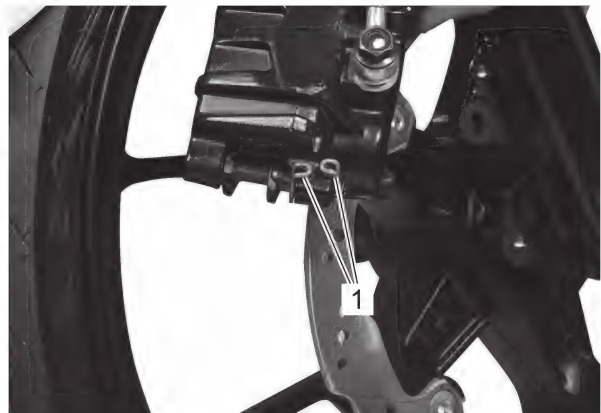
After replacing the brake pads, pump the brake lever several times to check for proper brake operation and then check the brake fluid level.

- 1) Remove the brake caliper (1).



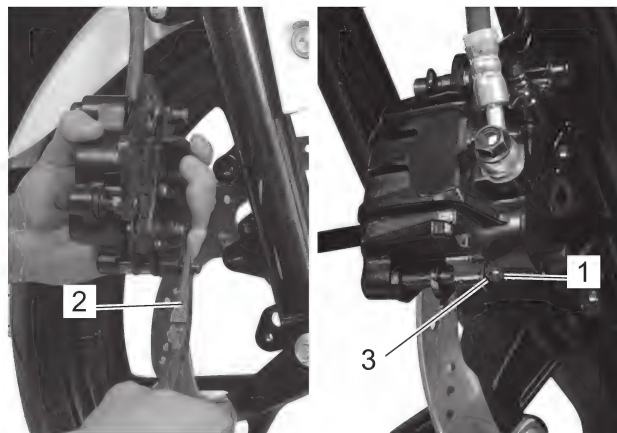
IH23K1420002-01

- 2) Remove the clip (1).



IH23K1420003-02

- 3) Push out the pad mounting pin (1) gradually pull it with a pliers (2) and release fitting of the pad mounting pin ring (3).

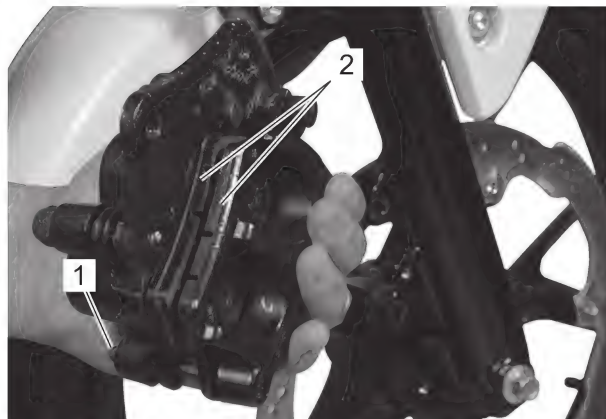


IH23K1420013-01

- 4) Remove the pad mounting pin (1) and brake pads (2).

NOTE

Do not operate the brake lever while removing the brake pads.

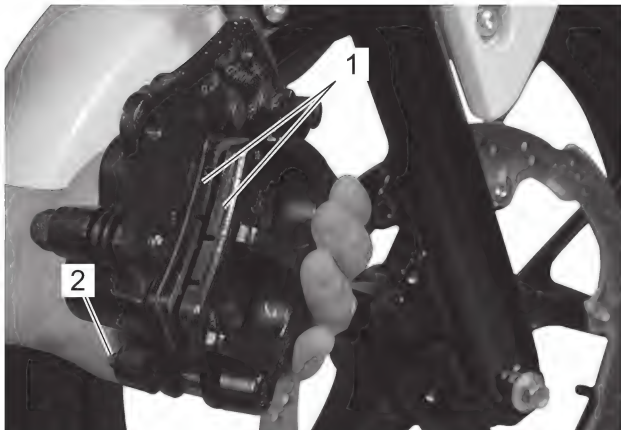


IH23K1420005-01

- 5) Clean up the caliper especially around the caliper pistons.
- 6) Push back the caliper pistons into the caliper. At the time, observe the reservoir level not to exceed the upper level.
- 7) Install new brake pads (1) and temporarily new pad mounting pin (2).

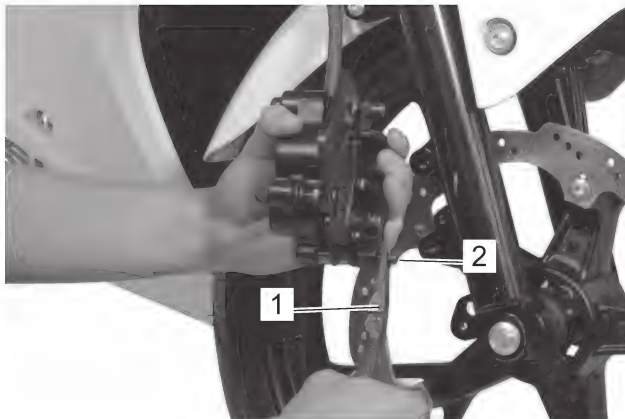
NOTE

Replace the brake pads as a set.



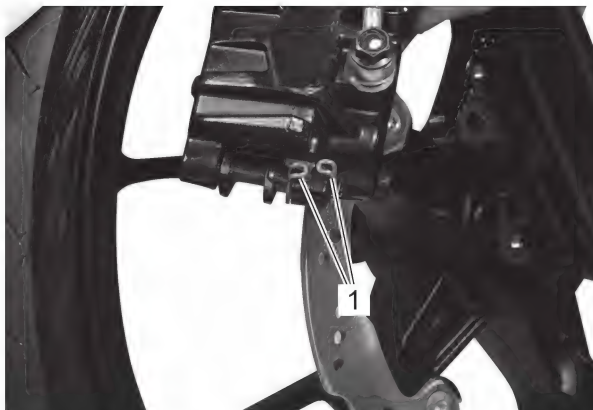
IH23K1420006-01

- 8) Insert the pad mounting pin gradually tapping it with the pliers (1) and fit the pad mounting pin ring (2).



IH23K1420014-02

- 9) Install a new clip (1).

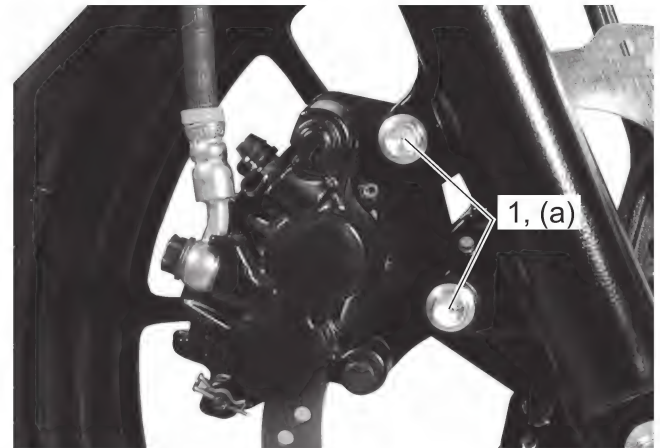


IH23K1420003-02

- 10) Install the brake caliper and tighten the brake caliper mounting bolts (1) to the specified torque.

Tightening torque

Caliper mounting bolt (a): 25 N·m (2.5 kgf-m, 19.0 lbf-ft)



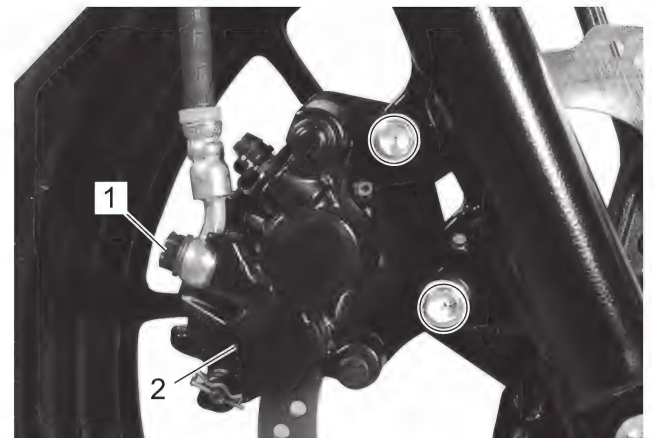
IH23K1420008-01

Front Brake Caliper Removal and Installation

BENH23K24206004

Removal

- 1) Drain brake fluid. (Page 4A-11)
- 2) Place a rag underneath the union bolt on the brake caliper to catch any spilt brake fluid.
- 3) Remove the brake hose from the caliper by removing the union bolt (1) and catch the brake fluid in a suitable receptacle.
- 4) Remove the caliper (2) by removing the caliper mounting bolts.



IH23K1420009-01

Installation

- 1) Install the brake caliper (1).
- 2) Tighten caliper mounting bolts (2) to the specified torque.

Tightening torque

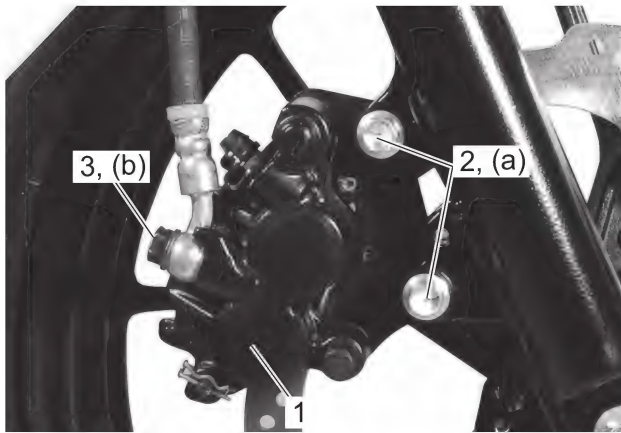
Caliper mounting bolt (a): 25 N·m (2.5 kgf-m, 19.0 lbf-ft)

4B-4 Front Brakes:

- 3) Install the brake hose union bolt (3) and new seal washers to brake hose.
- 4) After setting the brake hose union to the stopper, tighten the union bolt to the specified torque.

Tightening torque

Brake hose union bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



- 5) Bleed air from the brake system after installing the caliper. (Page 4A-8)
- 6) Check the brake fluid leakage referring to "Brake Hose Inspection" in Section 4A (Page 4A-6) and brake operation.

Front Brake Caliper Disassembly and Reassembly

BENH23K24206005

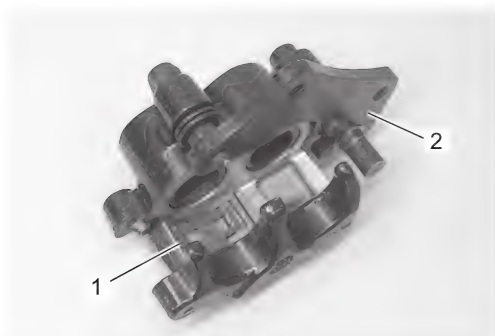
Refer to "Front Brake Caliper Removal and Installation" (Page 4B-3).

NOTICE

Take care not to damage piston and caliper cylinder of front brake caliper.

Disassembly

- 1) Remove the brake pads. (Page 4B-2)
- 2) Remove the pad spring (1) and caliper bracket (2).



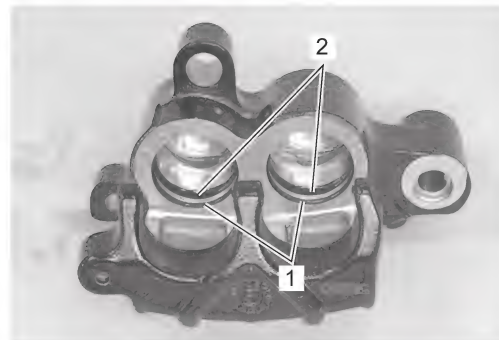
- 3) Remove the caliper pistons applying compressed air gradually from the hole for the brake hose.

⚠ WARNING

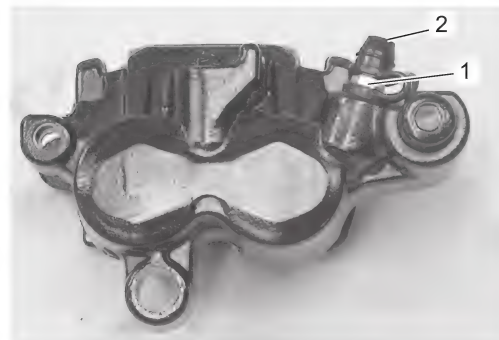
Do not apply highly compressed air to the piston as it is. Place a cloth to prevent the brake piston from jumping-out. Gradually apply compressed air. Do not place your fingers in front of brake piston while applying compressed air.



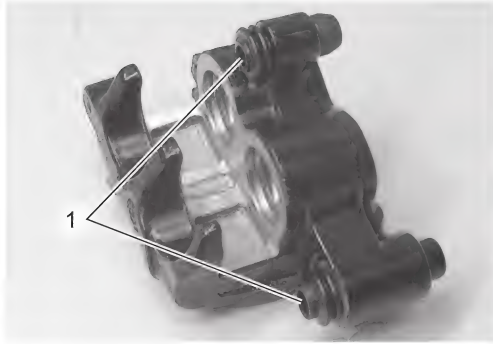
- 4) Remove the dust seals (1) and piston seals (2).



- 5) Remove the brake air bleeder valve (1) and bleeder valve cap (2).

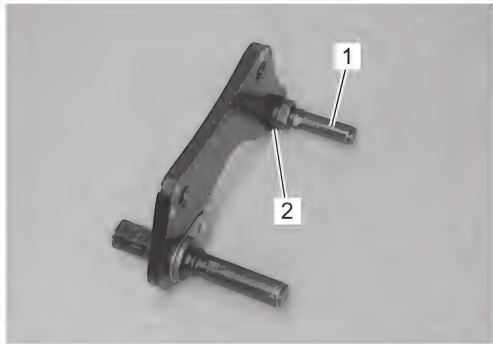


6) Remove the rubber boots (1).



IG12K1420014-01

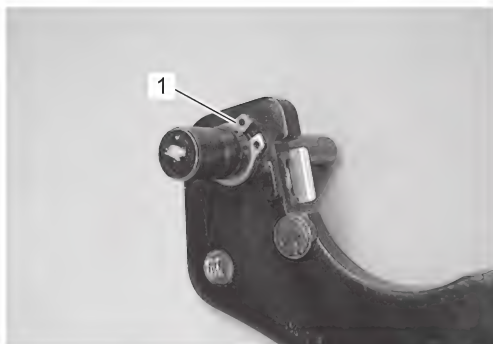
7) Remove the caliper bracket pin (1) and spacer (2).



IF34J1420031-01

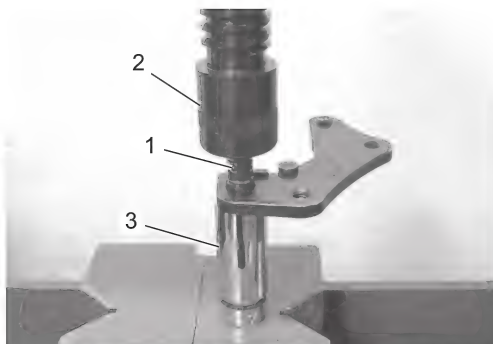
8) Remove the snap ring (1) using the special tool.

Special tool
09900-06107



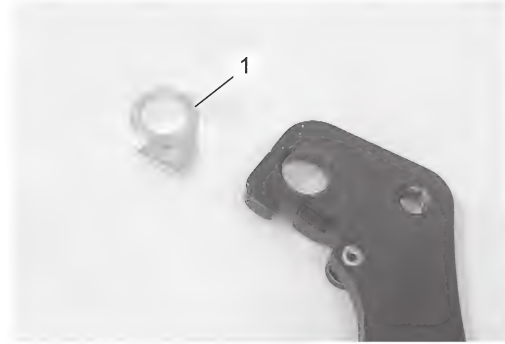
IF34J1420034-01

9) If necessary, remove the brake caliper bracket pin (1) using a hydraulic press (2) and suitable tool (3).



IG12K1420015-01

10) If necessary, remove the pad stopper (1).



IG12K1420016-01

Reassembly

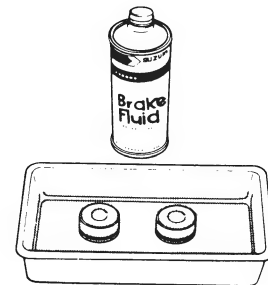
1) Wash the caliper bores and pistons with specified brake fluid. Particularly wash the dust seal grooves and piston seal grooves.

NOTICE

- Wash the caliper components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them.
- Do not wipe the brake fluid off after washing the components.
- When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvent such as gasoline, kerosene or the others.

Brake fluid (DOT 3)

Brake fluid (DOT 4)



I649G1420012-02

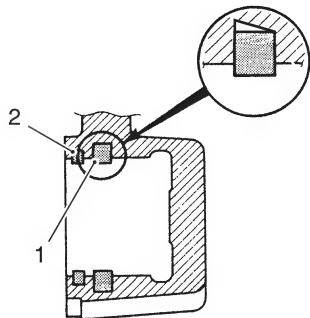
4B-6 Front Brakes:

- 2) Apply the brake fluid to new piston seals (1) and new dust seals (2).

Brake fluid (DOT 3)

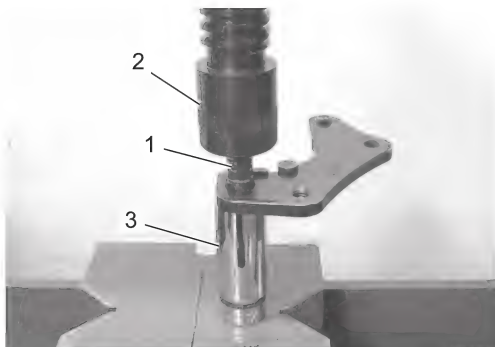
Brake fluid (DOT 4)

- 3) Install the piston seals and dust seals.



IG49G1420013-02

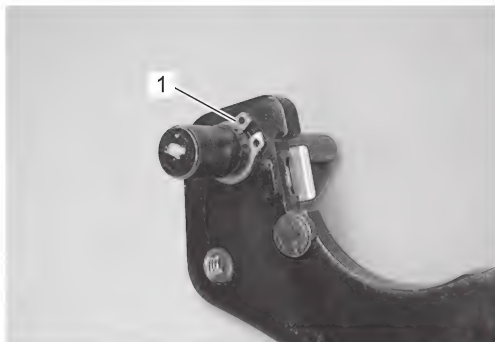
- 4) Install the caliper pistons to the brake caliper.
5) If removed, install the pad stopper.
6) If removed, install the brake caliper bracket pin (1) using a hydraulic press (2) and suitable tool (3).



IG12K1420015-01

- 7) Install a new snap ring (1) using the special tool.

Special tool
09900-06107



IF34J1420032-01

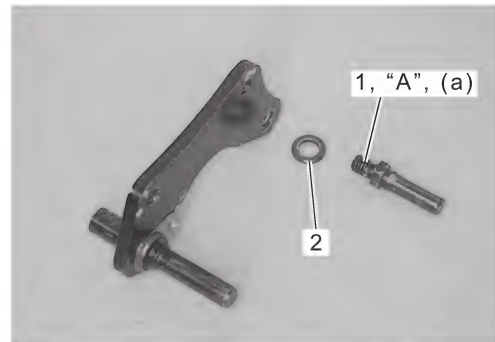
- 8) Apply thread lock to the thread portion of the caliper bracket pin (1).

"A": Thread lock cement 99000-32030 (THREAD LOCK CEMENT 1303B)

- 9) Install the spacer (2) and caliper bracket pin, and tighten the caliper bracket pin to the specified torque.

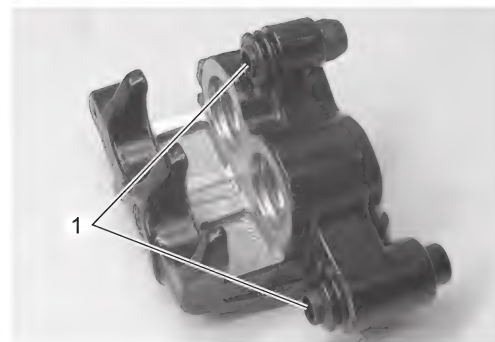
Tightening torque

Caliper bracket pin (a): 8.5 N·m (0.87 kgf-m, 6.30 lbf-ft)



IF34J1420033-01

- 10) Install the rubber boots (1).

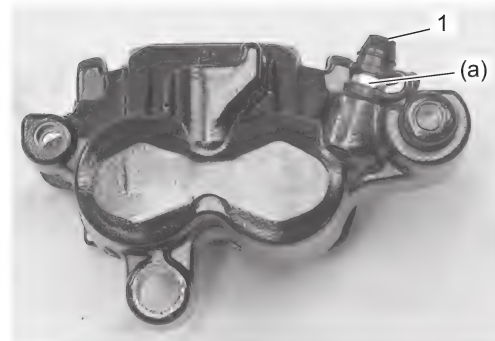


IG12K1420014-01

- 11) Install the bleeder valve cap (1) and brake air bleeder valve, and tighten brake air bleeder valve to the specified torque.

Tightening torque

Brake air bleeder valve (a): 7.5 N·m (0.76 kgf-m, 5.55 lbf-ft)

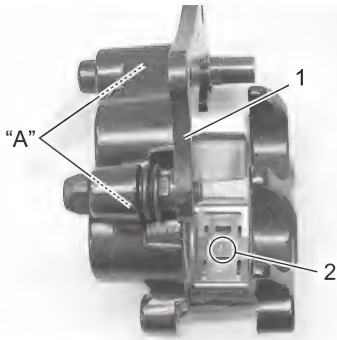


IG12K1420017-01

- 12) Apply grease to the sliding surface of the caliper bracket pins and install the caliper bracket (1).

"A": Grease 99000-25100 (SUZUKI SILICONE GREASE)

- 13) Install the pad spring pointing the triangle mark (2) toward the brake disc rotation.



IG12K1420018-02

- 14) Install the brake pads. (Page 4B-2)

Front Brake Caliper Parts Inspection

BENH23K24206006

Refer to "Front Brake Caliper Disassembly and Reassembly" (Page 4B-4).

Brake Caliper Cylinder

Inspect the brake caliper cylinder wall for nicks, scratches or other damage. If any defect is found, replace the brake caliper with a new one.



IG12K1420019-01

Brake Caliper Piston

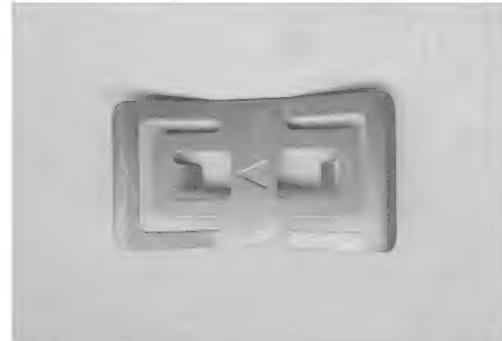
Inspect the brake caliper piston surfaces for any scratches or other damage. If any defect is found, replace them with new ones.



IF34J1420023-01

Brake Pad Spring

Inspect the brake pad spring for damage and excessive bend. If any defects are found, replace it with a new one.



IF34J1420025-01

Brake Caliper Bracket / Brake Caliper Bracket Pin

Inspect the brake caliper bracket and caliper bracket pins for wear and other damage. If any defect is found, replace them with new ones.



IF34J1420026-02

Rubber Boot

Inspect the rubber boots for damage and cracks. If any defect is found, replace them with new ones.



IF34J1420027-01

4B-8 Front Brakes:

Front Brake Disc Removal and Installation

BENH23K24206007

Refer to "Front Wheel Assembly Removal and Installation" in Section 2D (Page 2D-3).

Removal

Remove the front brake disc (1).



IH23K1420011-01

Installation

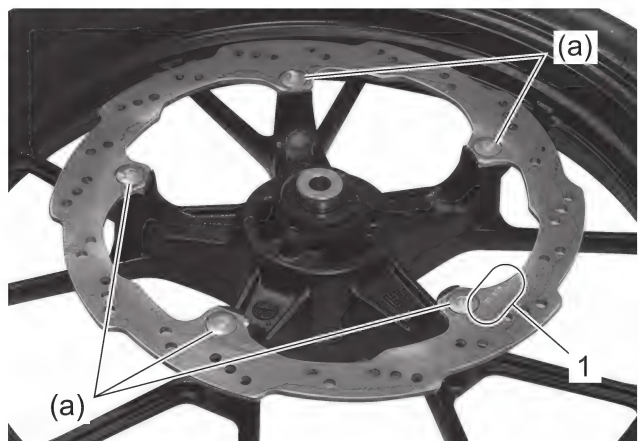
- 1) Make sure that the brake disc is clean and free of any grease.
- 2) Install the front brake disc and tighten new brake disc bolts to the specified torque.

NOTE

The stamped mark (1) on the brake disc should face to the outside.

Tightening torque

Brake disc bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K1420012-01

Front Brake Disc Inspection

BENH23K24206008

Brake Disc Thickness

Check the brake disc for damage or cracks and measure the thickness using the micrometer.

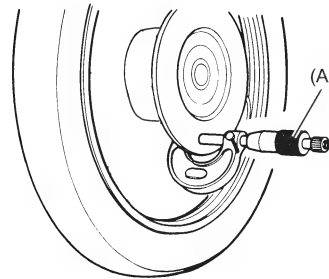
If the thickness is less than the service limit or if defect is found, replace the brake disc.

Special tool

(A): 09912-66310

Front brake disc thickness

[Limit]: 3.5 mm (0.14 in)



ID26J1420029-01

Brake Disc Runout

- 1) Dismount the front brake pads. (Page 4B-2)
- 2) Measure the runout using the dial gauge. Replace the disc if the runout exceeds the service limit.

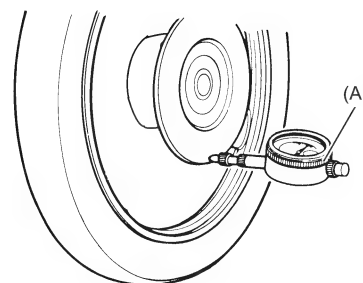
Special tool

(A): 09900-20607

09900-20701

Front brake disc runout

[Limit]: 0.30 mm (0.012 in)



ID26J1420030-04

- 3) Remount the front brake pads. (Page 4B-2)

Specifications

Tightening Torque Specifications

BENH23K24207001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Caliper mounting bolt	25	2.5	19.0	☞ (Page 4B-3) / ☞ (Page 4B-3)
Brake hose union bolt	23	2.3	17.0	☞ (Page 4B-4)
Caliper bracket pin	8.5	0.87	6.30	☞ (Page 4B-6)
Brake air bleeder valve	7.5	0.76	5.55	☞ (Page 4B-6)
Brake disc bolt	23	2.3	17.0	☞ (Page 4B-8)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Front Brake Components” (Page 4B-1)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K24208001

Material	SUZUKI recommended product or Specification		Note
Brake fluid	DOT 3	—	☞ (Page 4B-5) / ☞ (Page 4B-6)
	DOT 4	—	☞ (Page 4B-5) / ☞ (Page 4B-6)
Grease	SUZUKI SILICONE GREASE	P/No.: 99000-25100	☞ (Page 4B-6)
Thread lock cement	THREAD LOCK CEMENT 1303B	P/No.: 99000-32030	☞ (Page 4B-6)

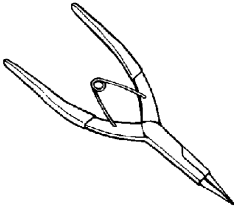
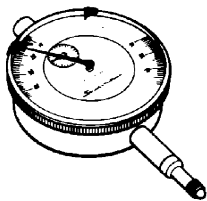
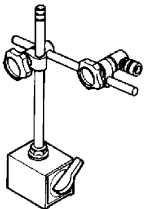
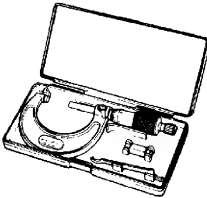
NOTE

Required service material(s) is also described in:

“Front Brake Components” (Page 4B-1)

Special Tool

BENH23K24208002

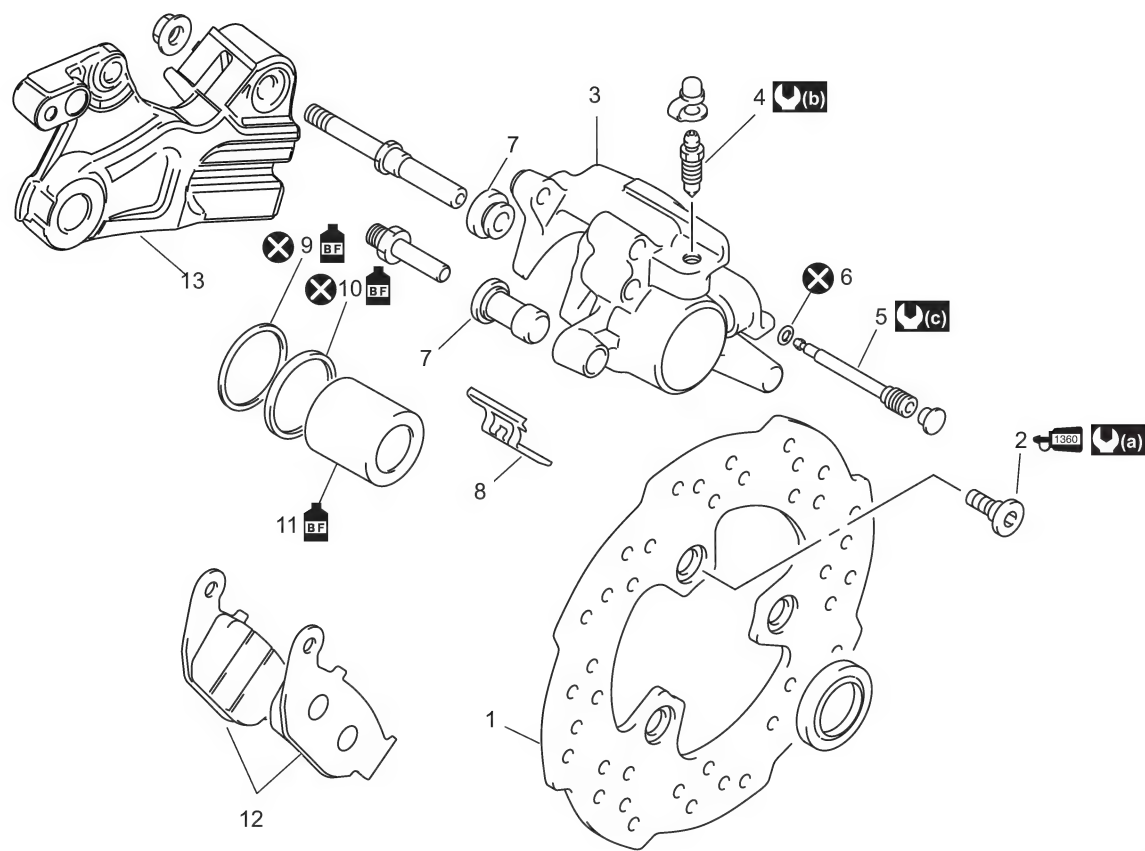
09900-06107 Snap ring pliers (External) ☞ (Page 4B-5) / ☞ (Page 4B-6)		09900-20607 Dial gauge (10 x 0.01 mm) ☞ (Page 4B-8)	
09900-20701 Dial gauge chuck ☞ (Page 4B-8)		09912-66310 Micrometer (0 - 25 mm) ☞ (Page 4B-8)	

Rear Brakes

Repair Instructions

Rear Brake Components

BENH23K24306001



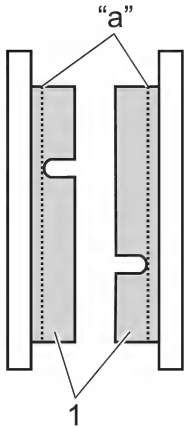
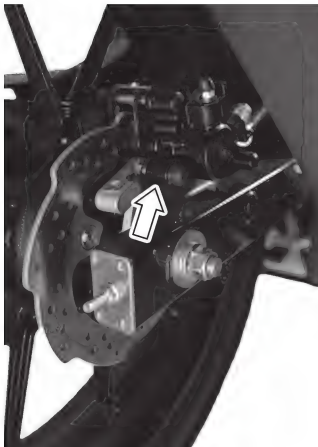
IH23K1430012-01

1. Rear brake disc	8. Pad spring	(b) : 7.5 N·m (0.76 kgf-m, 5.55 lbf-ft)
2. Rear brake disc bolt	9. Dust seal	(c) : 15 N·m (1.5 kgf-m, 11.0 lbf-ft)
3. Rear caliper	10. Piston seal	Ⓢ : Apply silicone grease to the sliding surface.
4. Bleeder valve	11. Piston	1360 : Apply thread lock to the thread part.
5. Brake pad mounting pin	12. Rear brake pad	BF : Apply brake fluid.
6. O-ring	13. Caliper bracket	⊗ : Do not reuse.
7. Boot		(a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

Rear Brake Pad Inspection

BENH23K24306002

The extent of brake pad (1) wear can be checked by observing the grooved limit line “a” on the pads. When the wear exceeds the grooved limit line, replace the pads with new ones. (Page 4C-2)



IH23K1430001-01

Rear Brake Pad Replacement

BENH23K24306003

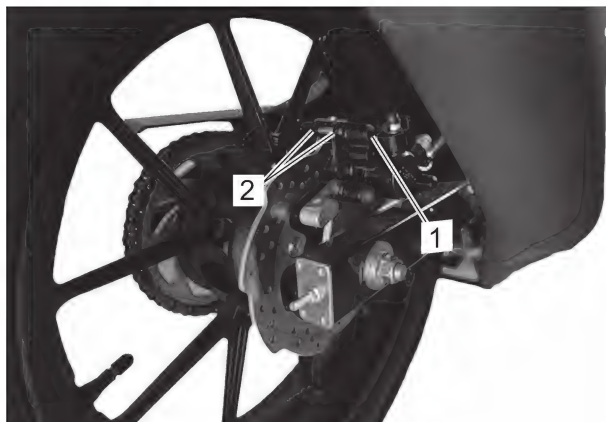
NOTE

After replacing the brake pads, pump the brake pedal several times to check for proper brake operation and then check the brake fluid level.

- 1) Remove the pad mounting pin (1).
- 2) Remove the brake pads (2).

NOTE

Do not operate the brake pedal while removing the brake pads.

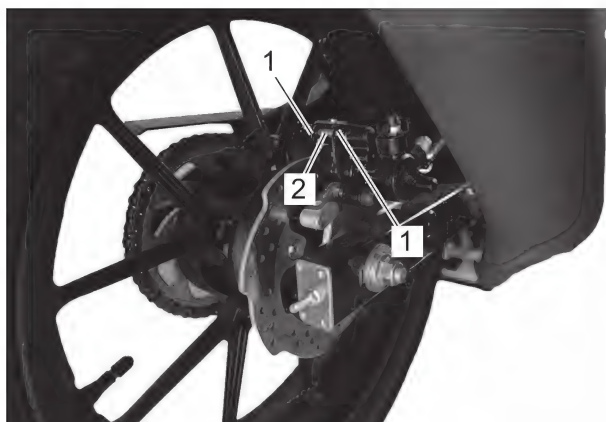


IH23K1430002-01

- 3) Clean up the caliper especially around the caliper piston.
- 4) Install new brake pads.

NOTE

- Check the pads end (1) for proper fit to the brake caliper bracket (2).
- Replace the brake pads as a set.



IH23K1430013-01

- 5) Install a new O-ring (1) to the rear brake pad mounting pin.

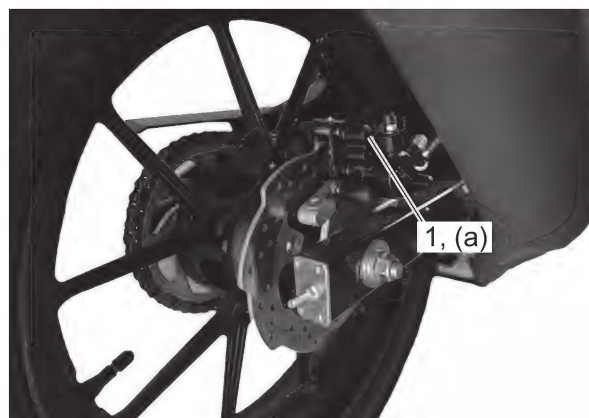


IH23K1430003-01

- 6) Tighten the pad mounting pin (1) to the specified torque.

Tightening torque

Rear brake pad mounting pin (a): 15 N·m (1.5 kgf-m, 11.0 lbf-ft)



IH23K1430004-01

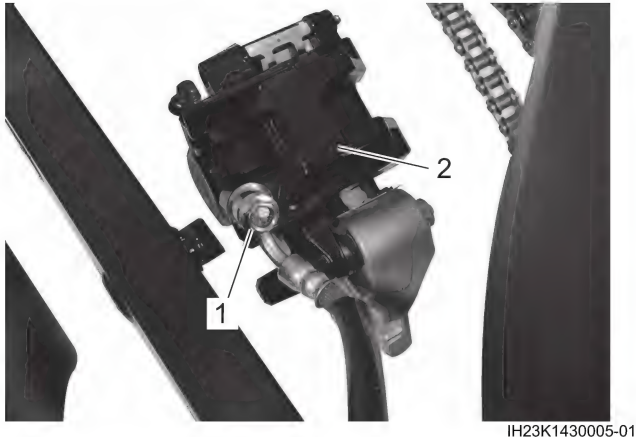
4C-3 Rear Brakes:

Rear Brake Caliper Removal and Installation

BENH23K24306004

Removal

- 1) Drain brake fluid. (Page 4A-11)
- 2) Remove the rear wheel. (Page 2D-6)
- 3) Place a rag underneath the union bolt on the brake caliper to catch any spilt brake fluid.
- 4) Remove the brake hose from the caliper by removing the union bolt (1) and catch the brake fluid in a suitable receptacle.
- 5) Remove the caliper (2) and caliper bracket.

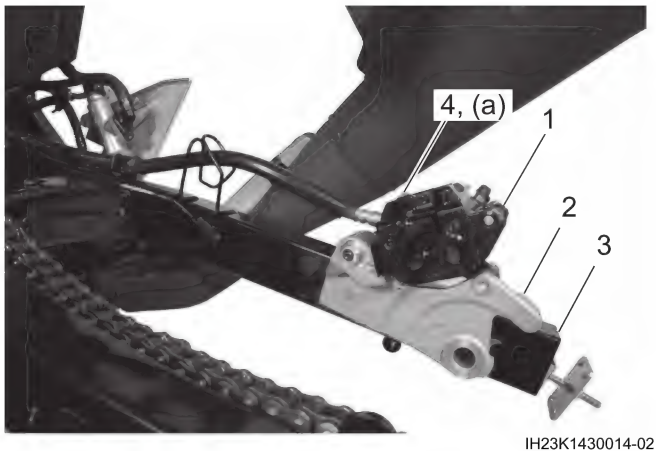


Installation

- 1) Install the brake caliper (1) and caliper bracket (2) to the swingarm (3).
- 2) Install the brake hose union bolt (4) and new seal washers to brake hose.
- 3) After the brake hose union has contacted the stopper, tighten the union bolt to the specified torque.

Tightening torque

Brake hose union bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



- 4) Install the rear wheel. (Page 2D-6)
- 5) Bleed air from the brake system. (Page 4A-8)

- 6) Check the brake fluid leakage referring to "Brake Hose Inspection" in Section 4A (Page 4A-6) and brake operation.

Rear Brake Caliper Disassembly and Reassembly

BENH23K24306005

Refer to "Rear Brake Caliper Removal and Installation" (Page 4C-3).

⚠ CAUTION

Take care not to damage piston and caliper cylinder of rear brake caliper.

Disassembly

- 1) Remove the caliper bracket (1).



IH23K1430006-01

- 2) Remove the pad spring (1).
- 3) Remove the axle insulator (2) and rubber boot (3).



IG12K1430009-01

- 4) Remove the caliper piston applying compressed air gradually from the hole for the brake hose.

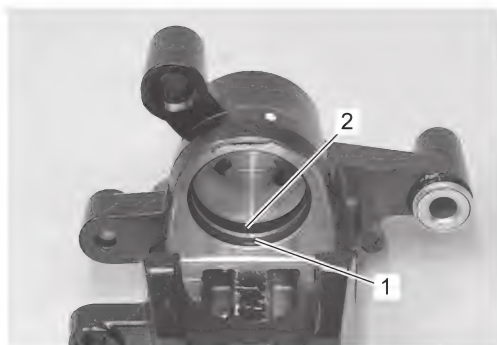
⚠ WARNING

Do not apply highly compressed air to the piston as it is. Place a cloth to prevent the brake piston from jumping-out. Gradually apply compressed air. Do not place your fingers in front of brake piston while applying compressed air.



IG12K1430010-01

- 5) Remove the dust seal (1) and piston seal (2).



IG12K1430011-01

Reassembly

Reassemble the caliper in the reverse order of disassembly. Pay attention to the following points:

- Wash the caliper bore and piston with specified brake fluid. Particularly wash the dust seal groove and piston seal groove.

NOTICE

- Wash the caliper components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them.
- Do not wipe the brake fluid off after washing the components.
- When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvent such as gasoline, kerosene or the others.

Brake fluid (DOT 3)

Brake fluid (DOT 4)



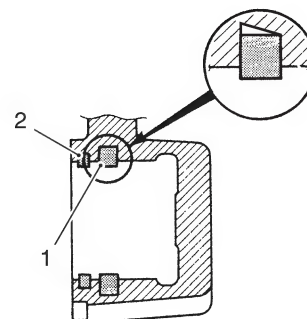
I649G1430018-02

- Apply the brake fluid to new piston seal (1) and new dust seal (2).

Brake fluid (DOT 3)

Brake fluid (DOT 4)

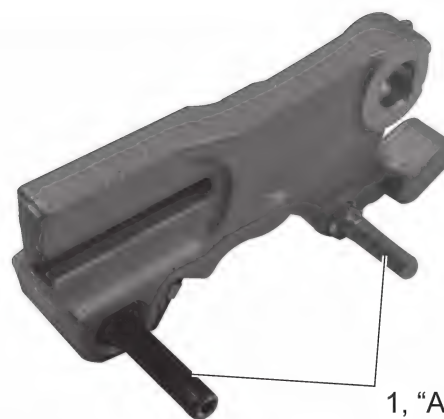
- Install the piston seal and dust seal.



I649G1420013-02

- Apply grease to the slide pins (1).

“A”: Grease 99000-25100 (SUZUKI SILICONE GREASE)



IH23K1430008-01

4C-5 Rear Brakes:

Rear Brake Caliper Parts Inspection

BENH23K24306006

Refer to "Rear Brake Caliper Disassembly and Reassembly" (Page 4C-3).

Brake Caliper Cylinder

Inspect the brake caliper cylinder wall for nicks, scratches or other damage. If any damage is found, replace the caliper with a new one.



IG12K1430013-01

Brake Caliper Piston

Inspect the brake caliper piston surface for any scratches or other damage. If any defects are found, replace the piston with a new one.



IG12K1430014-01

Brake Pad Mounting Pin

Inspect the brake pad mounting pin for wear and other damage. If any damage is found, replace the brake pad mounting pin with a new one.



IH23K1430009-01

Boots

Inspect the boots for damage and wear. If any defects are found, replace them with new ones.



IG12K1430016-02

Brake Pad Spring

Inspect the brake pad springs for damage and excessive bend. If any defects are found, replace them with new ones.



IH23K1430011-01

Brake Caliper Sliding Pin

Inspect the brake caliper sliding pin for wear and other damage. If any damage is found, replace the brake caliper sliding pin with a new one.



IH23K1430015-01

Rear Brake Disc Removal and Installation

BENH23K24306007

Refer to "Rear Wheel Assembly Removal and Installation" in Section 2D (Page 2D-6).

Removal

- 1) Remove the rear brake disc (1).



IH23K1430016-01

Installation

- 1) Make sure that the brake disc (1) is clean and free of any grease.
- 2) Install the rear brake disc.

NOTE

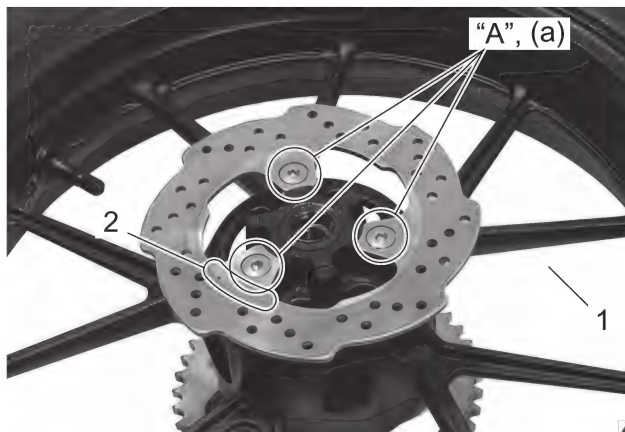
The stamped mark (2) on the brake disc should face to the outside.

- 3) Apply thread lock to the brake disc bolts and tighten them to the specified torque.

"A": Thread lock cement 99000-32130 (THREAD LOCK CEMENT 1360)

Tightening torque

Brake disc bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K1430017-01

Rear Brake Disc Inspection

BENH23K24306008

Brake Disc Thickness

Check the brake disc for damage or cracks and measure the thickness using the micrometer.

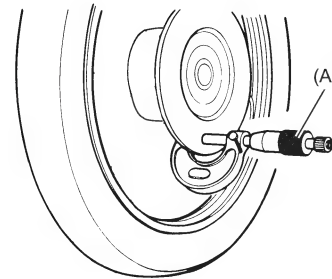
Replace the brake disc if the thickness is less than the service limit or if defect is found.

Special tool

(A): 09912-66310

Rear brake disc thickness

[Limit]: 3.5 mm (0.14 in)



ID26J1430036-01

Brake Disc Runout

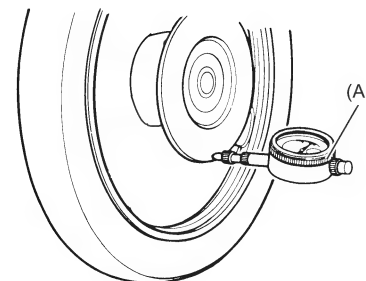
- 1) Dismount the rear brake pads. (Page 4C-2)
- 2) Measure the runout using the dial gauge. Replace the disc if the runout exceeds the service limit.

Special tool

**(A): 09900-20607
09900-20701**

Rear brake disc runout

[Limit]: 0.30 mm (0.012 in)



ID26J1430037-04

- 3) Remount the rear brake pads. (Page 4C-2)

Specifications

Tightening Torque Specifications

BENH23K24307001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Rear brake pad mounting pin	15	1.5	11.0	☞ (Page 4C-2)
Brake hose union bolt	23	2.3	17.0	☞ (Page 4C-3)
Brake disc bolt	23	2.3	17.0	☞ (Page 4C-6)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Rear Brake Components” (Page 4C-1)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K24308001

Material	SUZUKI recommended product or Specification		Note
Brake fluid	DOT 3	—	☞ (Page 4C-4) / ☞ (Page 4C-4)
	DOT 4	—	☞ (Page 4C-4) / ☞ (Page 4C-4)
Grease	SUZUKI SILICONE GREASE	P/No.: 99000–25100	☞ (Page 4C-4)
Thread lock cement	THREAD LOCK CEMENT 1360	P/No.: 99000–32130	☞ (Page 4C-6)

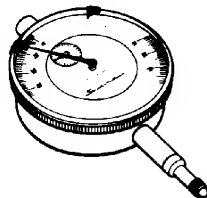
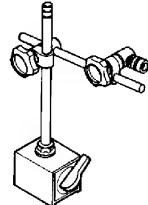
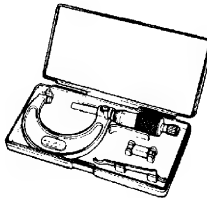
NOTE

Required service material(s) is also described in:

“Rear Brake Components” (Page 4C-1)

Special Tool

BENH23K24308002

09900–20607 Dial gauge (10 x 0.01 mm) ☞ (Page 4C-6)		09900–20701 Dial gauge chuck ☞ (Page 4C-6)	
09912–66310 Micrometer (0 - 25 mm) ☞ (Page 4C-6)			

Section 5

Transmission / Transaxle

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Precautions

Precautions

Precautions for Transmission / Transaxle

BENH23K25000001

Refer to “General Precautions” in Section 00 (Page 00-1).

Manual Transmission

Diagnostic Information and Procedures

Manual Transmission Symptom Diagnosis

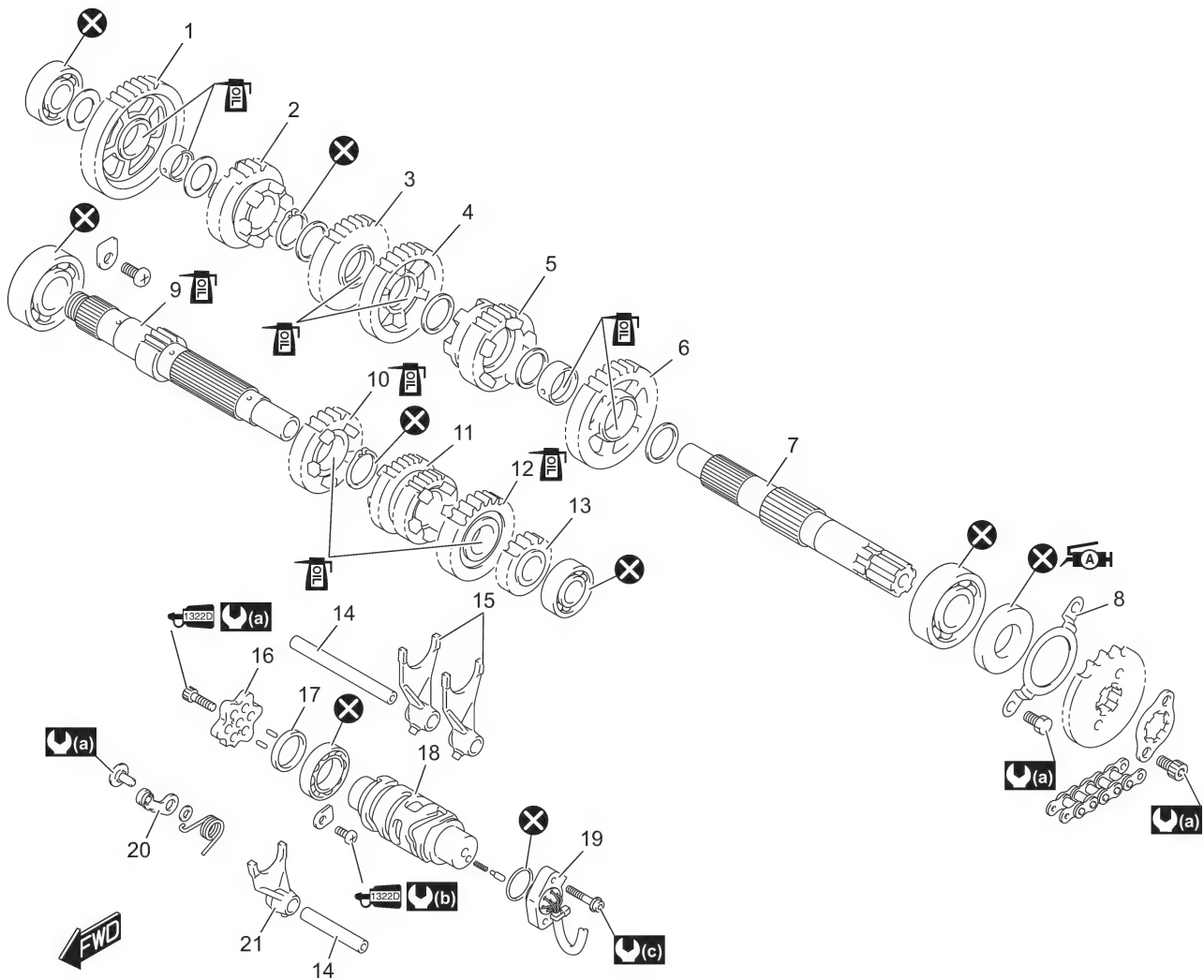
BENH23K25204001

Condition	Possible cause	Correction / Reference Item
Noisy engine (Noise seems to come from the transmission)	Worn or rubbing gear.	Replace. ⌚(Page 5B-4)
	Worn countershaft spline.	Replace countershaft. ⌚(Page 5B-4)
	Worn driveshaft spline.	Replace driveshaft. ⌚(Page 5B-4)
	Worn bearing.	Replace. ⌚(Page 5B-8)
Transmission will not shift	Broken gearshift cam.	Replace. ⌚(Page 5B-3)
	Distorted gearshift fork.	Replace. ⌚(Page 5B-3)
	Worn gearshift pawl.	Replace. ⌚(Page 5B-15)
Transmission will not shift back	Broken gearshift shaft return spring.	Replace. ⌚(Page 5B-15)
	Rubbing or stuck gearshift shaft.	Repair or replace. ⌚(Page 5B-15)
	Worn or distorted gearshift fork.	Replace. ⌚(Page 5B-3)
Transmission jumps out of gear	Worn shifting gears on driveshaft or countershaft.	Replace. ⌚(Page 5B-4)
	Worn or distorted gearshift fork.	Replace. ⌚(Page 5B-3)
	Weakened gearshift cam stopper spring.	Replace. ⌚(Page 5B-15)
	Worn gearshift cam plate.	Replace. ⌚(Page 5B-15)

Repair Instructions

Transmission Components

BENH23K25206001



IG12K1520001-03

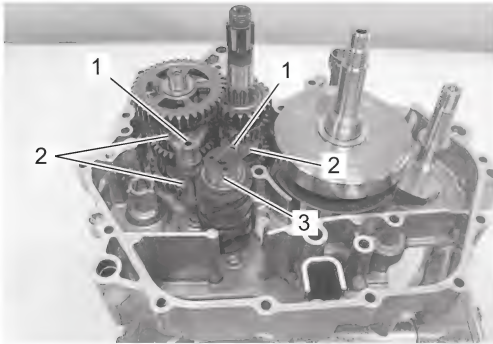
1. 1st driven gear	8. Oil seal retainer	15. Gearshift fork No.1	: 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
2. 5th driven gear	9. Countershaft/1st drive gear	16. Gearshift cam plate	: 8.5 N·m (0.87 kgf-m, 6.30 lbf-ft)
3. 4th driven gear	10. 5th drive gear	17. Gearshift cam bearing spacer	: 4.0 N·m (0.41 kgf-m, 2.95 lbf-ft)
4. 3rd driven gear	11. 3rd/4th drive gear	18. Gearshift cam	: Apply grease.
5. 6th driven gear	12. 6th drive gear	19. GP switch	: Apply thread lock to the thread part.
6. 2nd driven gear	13. 2nd drive gear	20. Gearshift cam stopper	: Apply engine oil.
7. Driveshaft	14. Gearshift fork shaft	21. Gearshift fork No.2	: Do not reuse.

Transmission Removal and Installation

BENH23K25206002

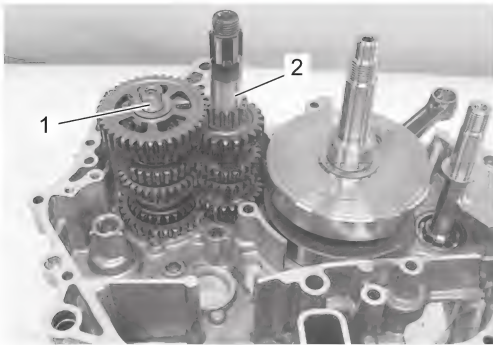
Removal

- 1) Remove the engine assembly. (Page 1D-44)
- 2) Remove the right crankcase. (Page 1D-47)
- 3) Remove the kick starter shaft assembly. (Page 1I-14)
- 4) Remove the gearshift fork shafts (1), gearshift forks (2) and gearshift cam (3).



IG12K1520002-01

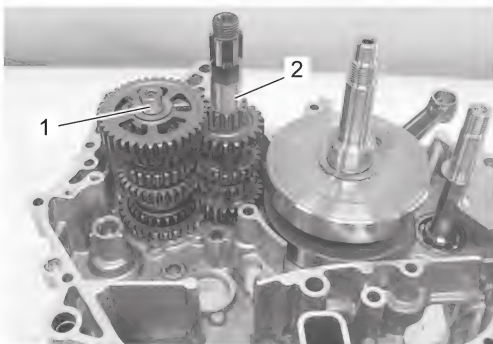
- 5) Remove the driveshaft assembly (1) with the countershaft assembly (2).



IG12K1520003-01

Installation

- 1) Install the driveshaft assembly (1) with the countershaft assembly (2).

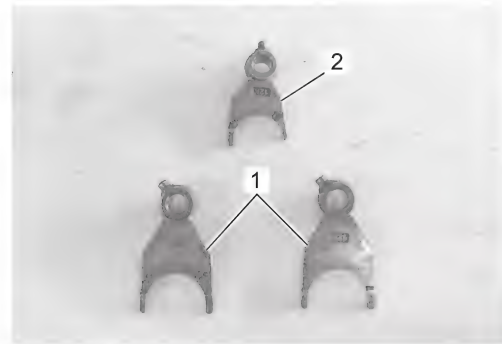


IG12K1520003-01

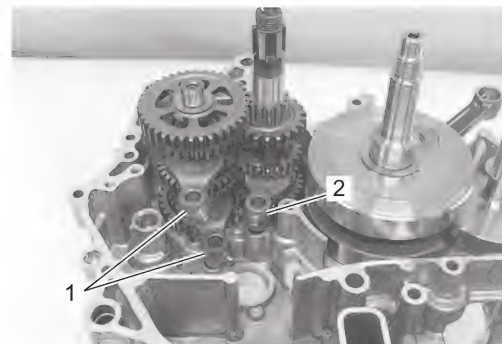
- 2) Install the gearshift forks No.1 (1) and No.2 (2).

NOTE

The gearshift forks No.1 are same parts.



IG12K1520004-01

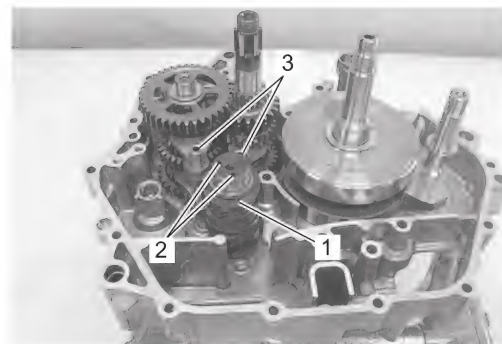


IG12K1520005-01

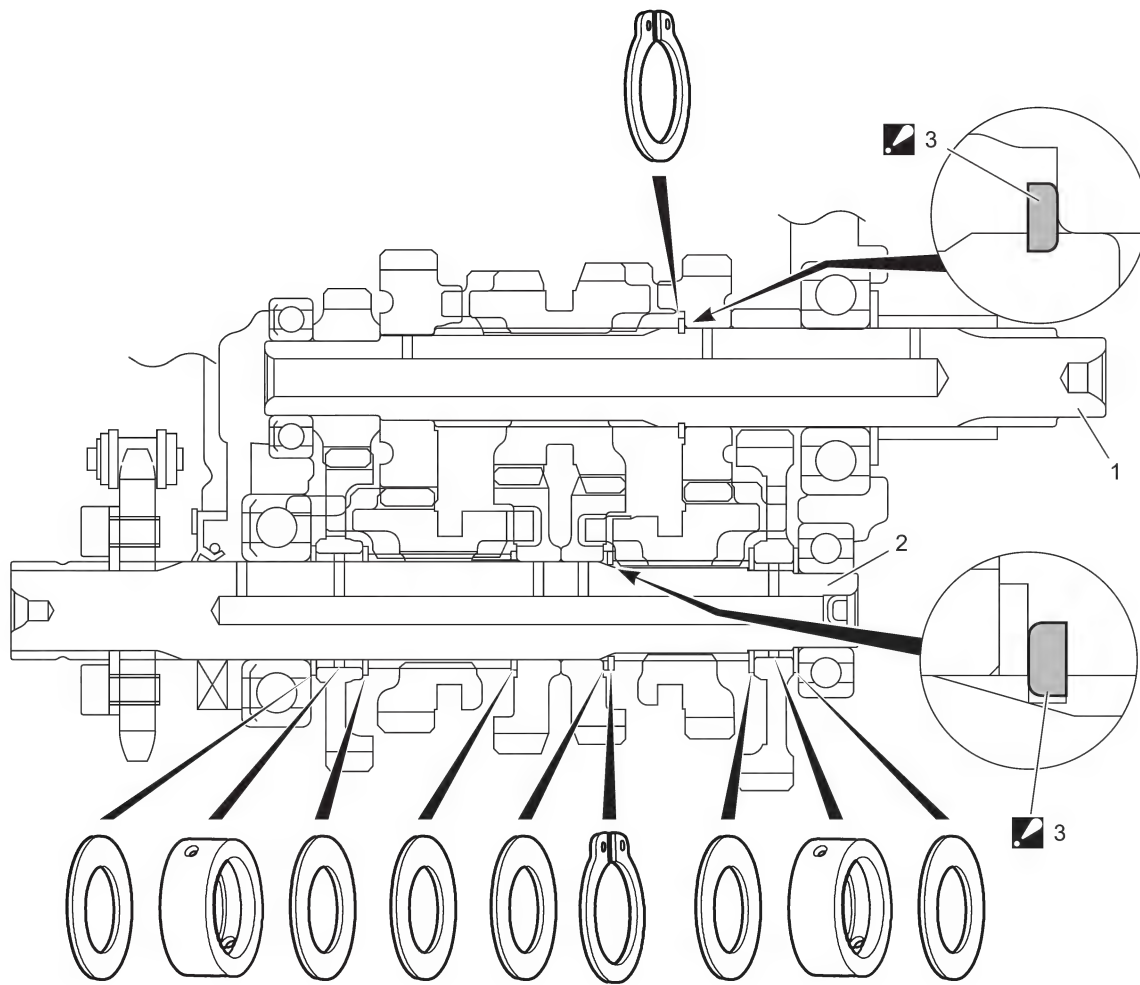
- 3) Install the gearshift cam (1) so that the two holes (2) face upward.
- 4) Engage each gearshift fork end to the gearshift cam groove.
- 5) Install the gearshift fork shafts (3).

NOTE

- After the gearshift fork shafts and gearshift forks have been fitted, make sure that the gears engage normally.
- Set the transmission gears to the neutral position.



IG12K1520006-01



IG12K1520057-01

1. Countershaft

2. Driveshaft

3. Snap ring
: Face the sharp edge outside.

Countershaft Assembly / Driveshaft Assembly Disassembly and Reassembly

BENH23K25206004

Refer to "Transmission Removal and Installation" (Page 5B-3).

Disassembly

NOTE

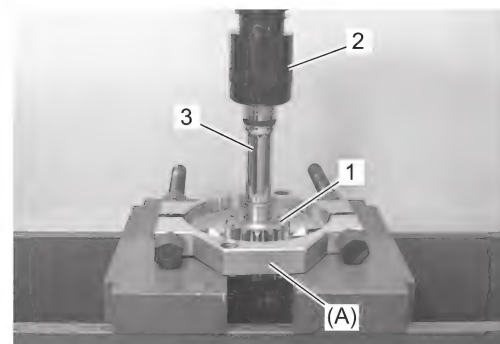
Identify the position of each removed part.
Organize the parts in their respective groups
(i.e., drive or driven) so that they can be
reinstalled in their original positions.

Countershaft

- 1) Remove the 2nd drive gear (1) using the special tool, hydraulic press (2) and suitable tool (3).

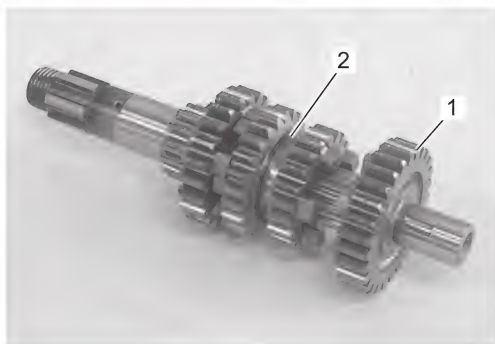
Special tool

(A): 09913-65850



IG12K1520007-02

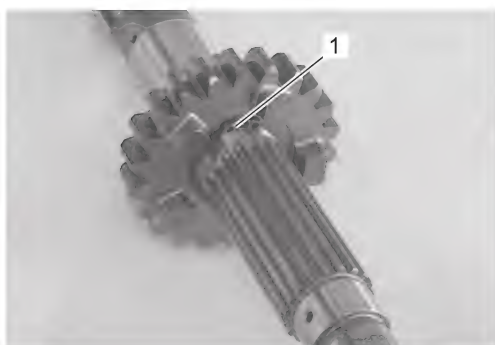
- 2) Remove the 6th drive gear (1) and 3rd/4th drive gear (2).



IG12K1520008-01

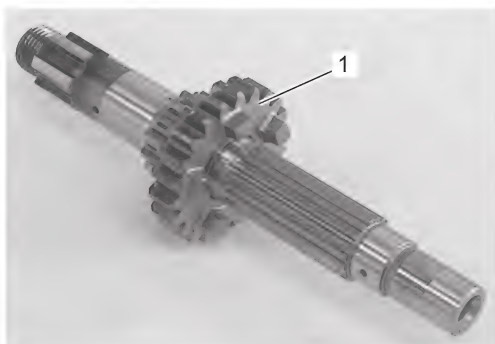
- 3) Remove the snap ring (1).

Special tool
09900-06107



IG12K1520009-01

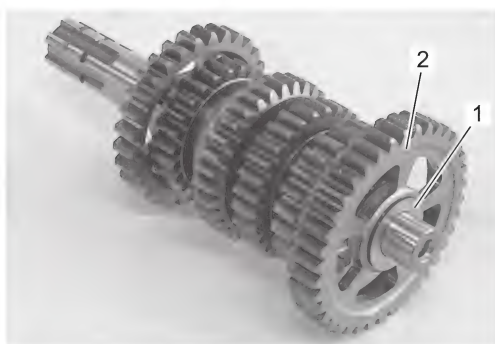
- 4) Remove the 5th drive gear (1).



IG12K1520010-01

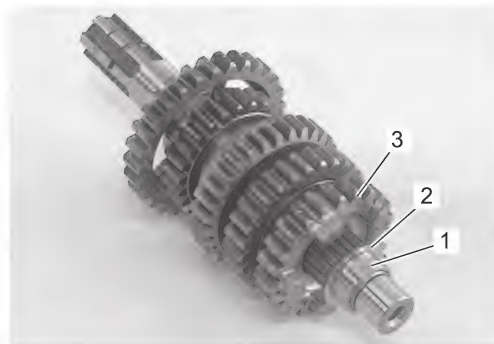
Driveshaft

- 1) Remove the washer (1) and 1st driven gear (2).



IG12K1520011-01

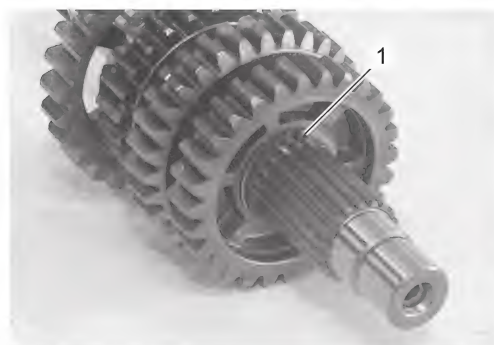
- 2) Remove the 1st driven gear bushing (1), washer (2) and 5th driven gear (3).



IG12K1520012-01

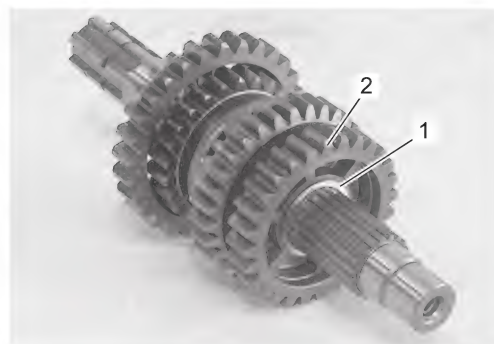
- 3) Remove the snap ring (1).

Special tool
09900-06107



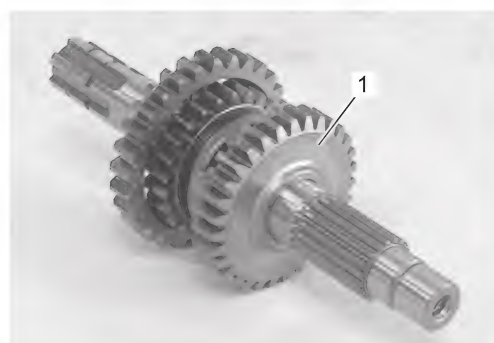
IG12K1520013-01

- 4) Remove the washer (1) and 4th driven gear (2).



IG12K1520014-01

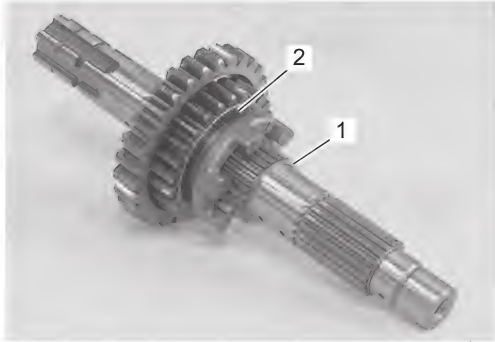
- 5) Remove the 3rd driven gear (1).



IG12K1520015-01

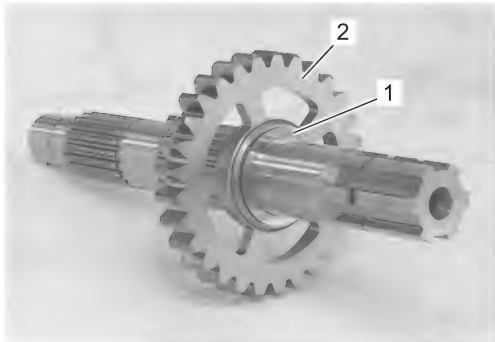
5B-6 Manual Transmission:

- 6) Remove the washer (1) and 6th driven gear (2).



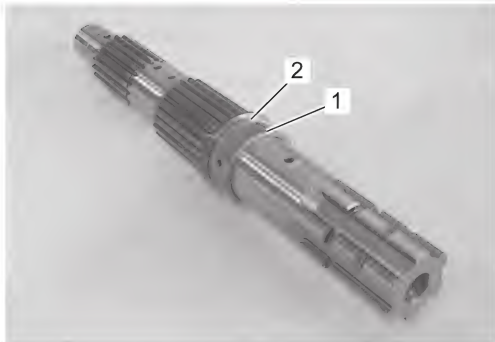
IG12K1520016-01

- 7) Remove the washer (1) and 2nd driven gear (2).



IG12K1520017-01

- 8) Remove the 2nd driven gear bushing (1) and washer (2).



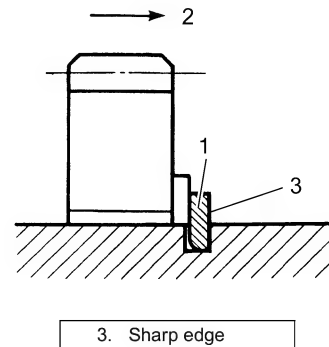
IG12K1520018-01

Reassembly

Reassemble the countershaft and driveshaft in the reverse order of disassembly. Pay attention to the following point:

NOTE

- When reassembling the transmission gears, attention must be given to the locations and positions of washers and snap rings. The cross sectional view shows the correct position of the gears, bushings, washers and snap rings. Refer to "Transmission Construction" (Page 5B-4).
 - When installing new snap rings, do not expand the end gap larger than required to slip the snap rings over the shaft.
 - After installing snap rings, make sure that they are completely seated in its groove and securely fitted.
 - Before installing the gears, apply engine oil to each rotating and sliding part.
- When installing a new snap ring (1), pay attention to its direction. Fit it to the side where the thrust (2) is as shown in the illustration.



IE31J1520022-01

Gearshift Fork / Gearshift Cam Inspection

BENH23K25206005

Refer to "Countershaft Assembly / Driveshaft Assembly Disassembly and Reassembly" (Page 5B-4).

Gearshift Fork to Groove Clearance

Using a thickness gauge, check the gearshift fork clearance in the groove of its gear.

If the clearance checked is noted to exceed the limit specified, replace the fork or its gear, or both.

NOTE

The clearance for each gearshift fork plays an important role in the smoothness and positiveness of the shifting action.

Special tool

(A): 09900-20803

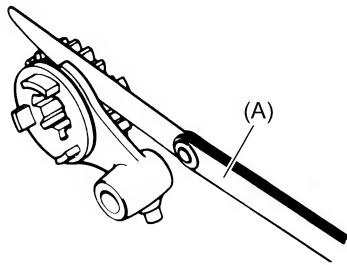
Gearshift fork to groove clearance

No.1 [Standard]: 0.1 – 0.3 mm (0.004 – 0.011 in)

[Limit]: 0.5 mm (0.019 in)

No.2 [Standard]: 0.1 – 0.3 mm (0.004 – 0.011 in)

[Limit]: 0.5 mm (0.019 in)



IE31J1520026-01

Gearshift Fork Groove Width

Measure the gearshift fork groove width using the vernier calipers.

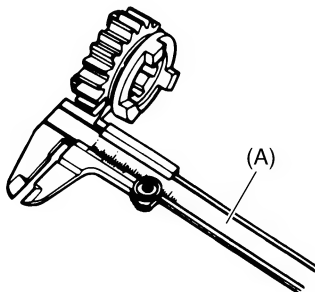
Special tool

(A): 09900-20102

Gearshift fork groove width

No.1 [Standard]: 5.5 – 5.6 mm (0.217 – 0.220 in)

No.2 [Standard]: 5.0 – 5.1 mm (0.197 – 0.200 in)



IE31J1520027-01

Gearshift Fork Thickness

Measure the gearshift fork thickness using the vernier calipers.

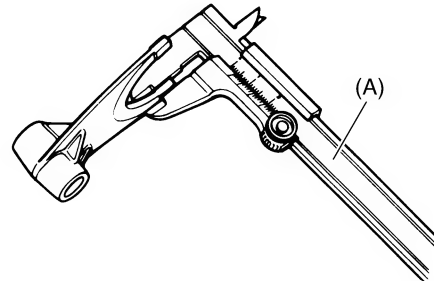
Special tool

(A): 09900-20102

Gearshift fork thickness

No.1 [Standard]: 5.3 – 5.4 mm (0.209 – 0.212 in)

No.2 [Standard]: 4.8 – 4.9 mm (0.189 – 0.192 in)



IE31J1520028-01

Gearshift Cam

Inspect the gearshift cam groove for abnormal wear and damage. If any defects are found, replace the gearshift cam with a new one.



IG12K1520019-01

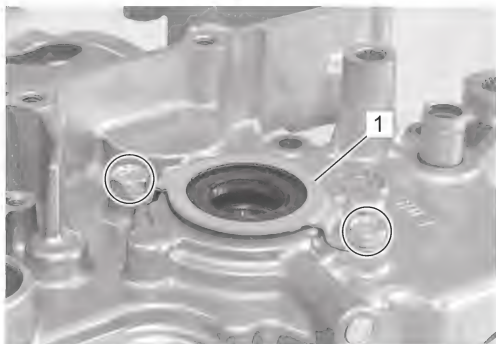
Transmission Bearing / Oil Seal Removal and Installation

BENH23K25206006

Removal

Left crankcase

- 1) Remove the engine assembly. (Page 1D-44)
- 2) Remove the right crankcase. (Page 1D-47)
- 3) Remove the kick starter shaft assembly. (Page 1I-14)
- 4) Remove the transmission. (Page 5B-3)
- 5) Remove the oil seal retainer (1).

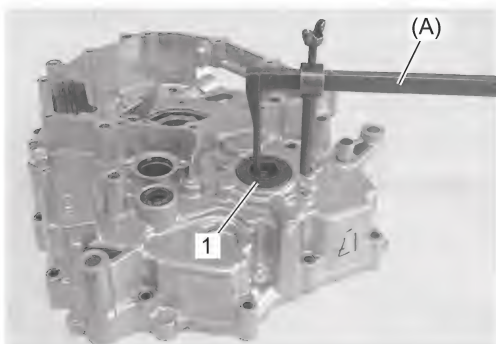


IG12K1520020-01

- 6) Remove the driveshaft oil seal (1) using the special tool.

Special tool

(A): 09913-50121



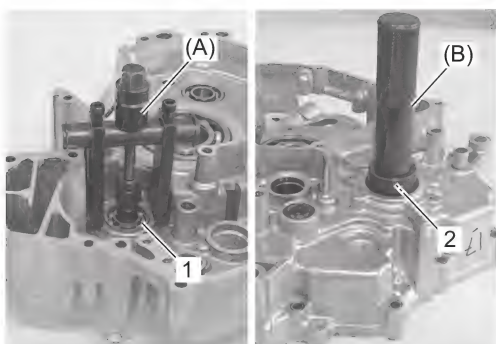
IG12K1520021-01

- 7) Remove the countershaft bearing (1) and driveshaft bearing (2) using the special tools.

Special tool

(A): 09921-20240

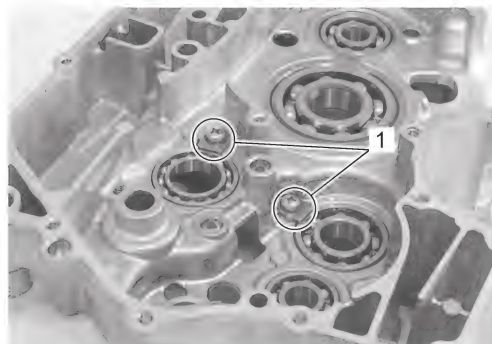
(B): 09913-70210



IG12K1520022-01

Right crankcase

- 1) Remove the engine assembly. (Page 1D-44)
- 2) Remove the right crankcase. (Page 1D-47)
- 3) Remove the bearing retainers (1).

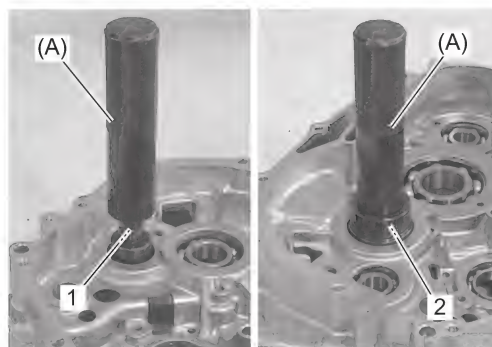


IG12K1520023-01

- 4) Remove the countershaft bearing (1) and driveshaft bearing (2) using the special tool.

Special tool

(A): 09913-70210

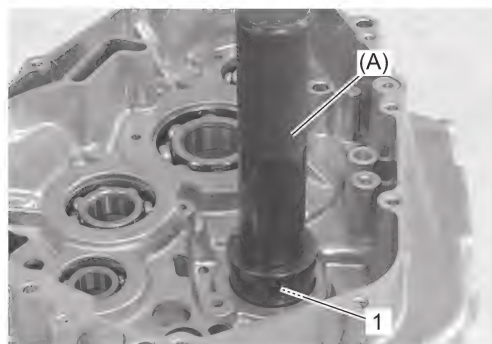


IG12K1520024-01

- 5) Remove the gearshift cam bearing (1) using the special tool.

Special tool

(A): 09913-70210



IG12K1520058-01

Installation**Left crankcase**

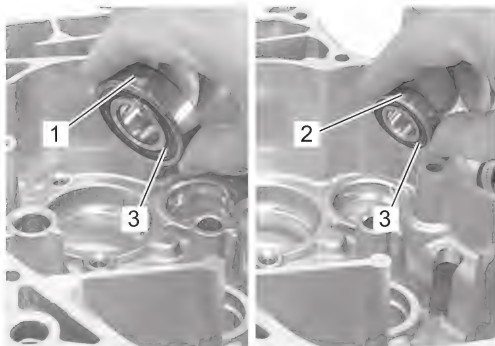
- 1) Install a new driveshaft bearing (1) and a new countershaft bearing (2) using the special tool.

NOTE

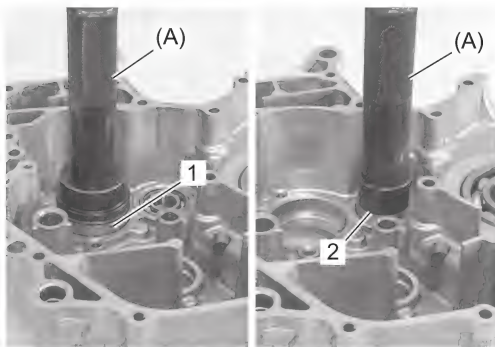
The sealed side (3) of the bearings faces outside.

Special tool

(A): 09913-70210



IG12K1520025-01

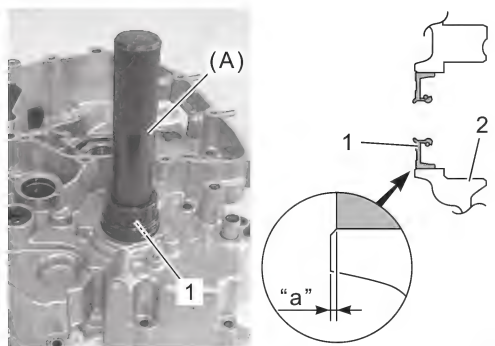


IG12K1520026-01

- 2) Install a new driveshaft oil seal (1) using the special tool.

Special tool

(A): 09913-70210



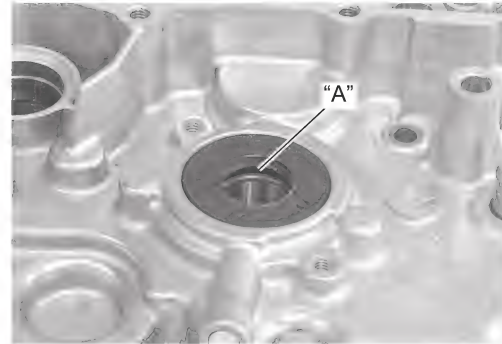
IG12K1520027-01

2. Left crankcase

"a": 0 – 1 mm (0 – 0.04 in)

- 3) Apply grease to the oil seal lip.

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)

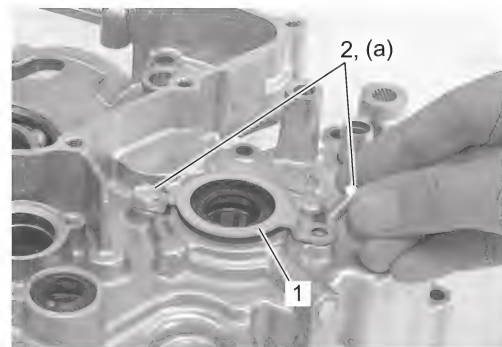


IG12K1520028-01

- 4) Install the oil seal retainer (1) and tighten its bolts (2) to the specified torque.

Tightening torque

Driveshaft oil seal retainer bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



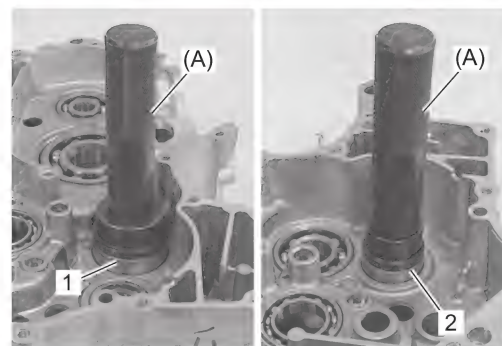
IG12K1520029-02

Right crankcase

- 1) Install a new countershaft bearing (1) and a new driveshaft bearing (2) using the special tool.

Special tool

(A): 09913-70210

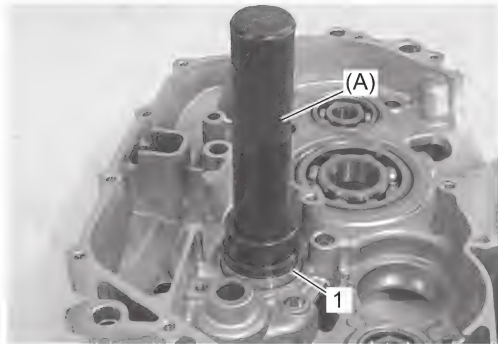


IG12K1520030-01

5B-10 Manual Transmission:

- 2) Install the gearshift cam bearing (1) using the special tool.

Special tool
(A): 09913-70210



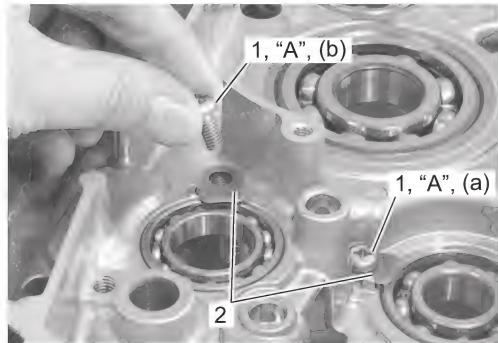
IG12K1520059-01

- 3) Apply thread lock to the bearing retainer screws (1).

“A”: Thread lock cement 99000-32150 (THREAD LOCK CEMENT 1322D)

- 4) Install the bearing retainers (2) and tighten its screws to the specified torque.

Tightening torque
Countershaft bearing retainer screw (a): 8.5 N·m (0.87 kgf-m, 6.30 lbf-ft)
Gearshift cam bearing retainer screw (b): 8.5 N·m (0.87 kgf-m, 6.30 lbf-ft)



IG12K1520031-02

Transmission Bearing / Oil Seal Inspection

BENH23K25206007

Refer to “Crankcase Bearing / Oil Seal Inspection” in Section 1D (Page 1D-52).

GP Switch Inspection

BENH23K25206008

1) GSX R 150 Model

Remove front fairing. (Page 9D-22)

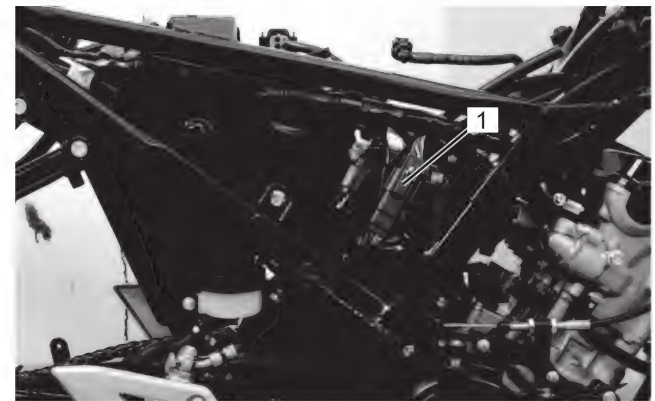
GSX S 150 Model

Remove fuel tank side cover. (Page 9D-23)

- 2) Remove right frame cover. (Page 9D-30)
3) Disconnect the GP switch lead wire couplers (1).

NOTICE

When disconnecting and connecting the neutral switch coupler, make sure to turn “OFF” the ignition switch, or electronic parts may get damaged.



IH23K1520001-04

- 4) Check the continuity between the B/W wire terminal and other wire terminal with the transmission in each position as follows. If any defect is found, replace the GP switch with a new one.

Color Position	B/W	W/Y	L	R/B	G/L	Y/L	Br/R	G/R
1st	○	○						
Neutral	○	—	○					
2nd	○	—	—	○				
3rd	○	—	—	—	○			
4th	○	—	—	—	—	○		
5th	○	—	—	—	—	—	○	
6th	○	—	—	—	—	—	—	○

IH23K1520002-01

GP Switch Removal and Installation

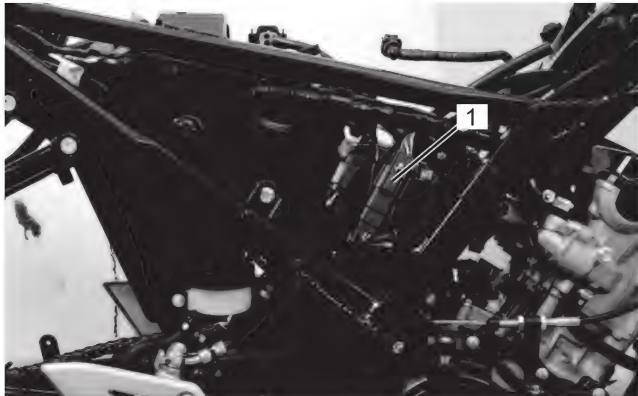
BENH23K25206009

Removal**1) GSX R 150 Model**

- a) Remove front fairing. (Page 9D-22)
- b) Remove right frame cover. (Page 9D-30)

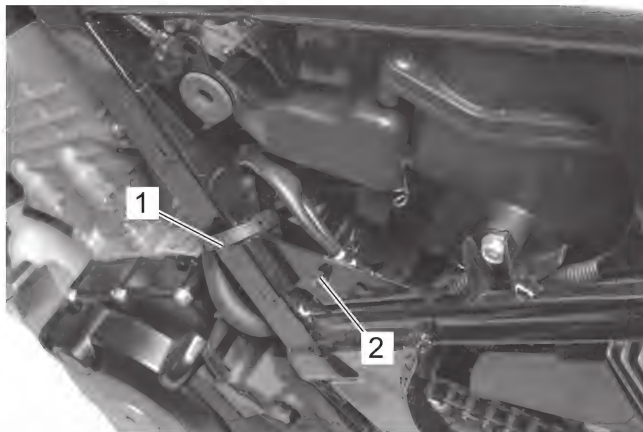
GSX S 150 Model

- a) Remove fuel tank side cover. (Page 9D-23)
 - b) Remove right frame cover. (Page 9D-30)
- 2) Remove the engine sprocket cover. (Page 3A-4)
 - 3) Disconnect the GP switch lead wire couplers (1).



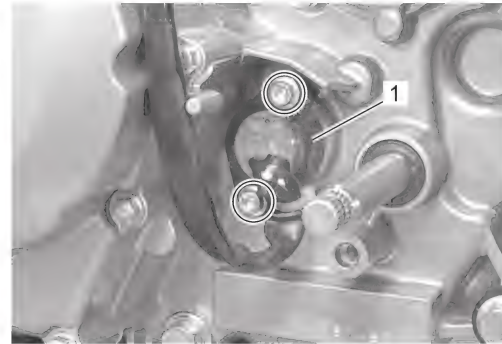
IH23K1520001-04

- 4) Remove the clamp (1) and disconnect the harness clamps (2) from the frame.



IH23K1520006-01

- 5) Remove the GP switch (1).

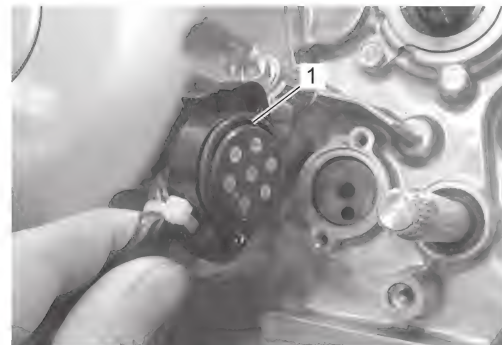


IG12K1520035-01

Installation

Install the GP switch in the reverse order of removal. Pay attention to the following points:

- Install a new O-ring (1) to the GP switch.

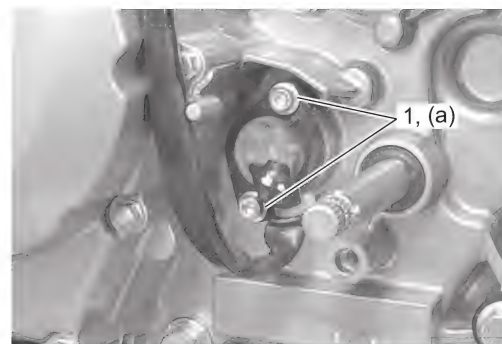


IG12K1520036-02

- Tighten the GP switch mounting bolts (1) to the specified torque.

Tightening torque

GP switch mounting bolt (a): 4.0 N·m (0.41 kgf-m, 2.95 lbf-ft)



IG12K1520037-01

- Route the GP switch lead wire. Refer to "Wiring Harness Routing Diagram" in Section 9A (Page 9A-7).

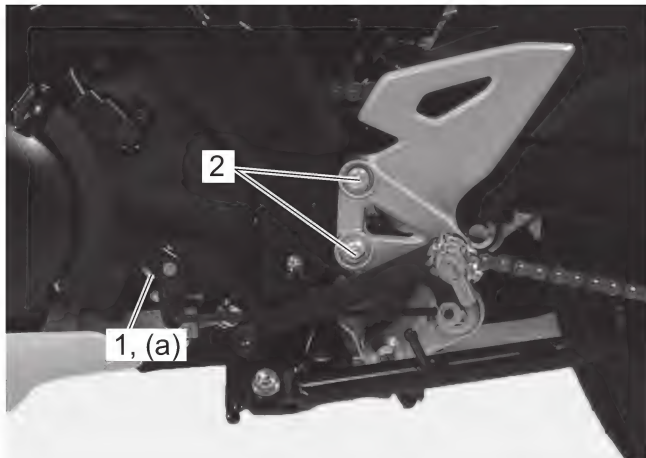
Gearshift Lever Removal and Installation

BENH23K25206010

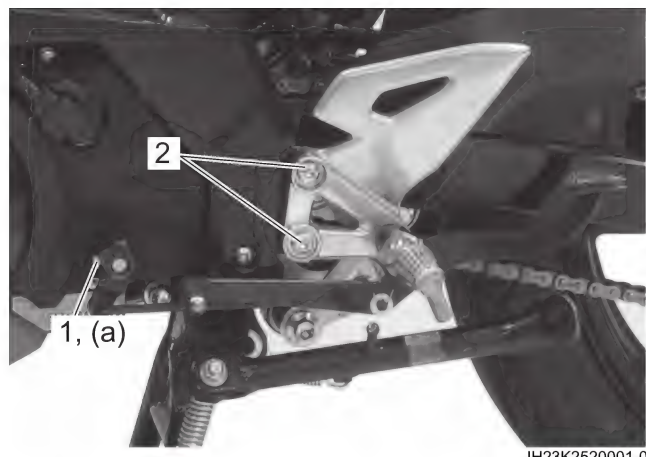
Removal

- 1) Remove footrest bracket bolt (2).

GSX R 150 Model



GSX S 150 Model

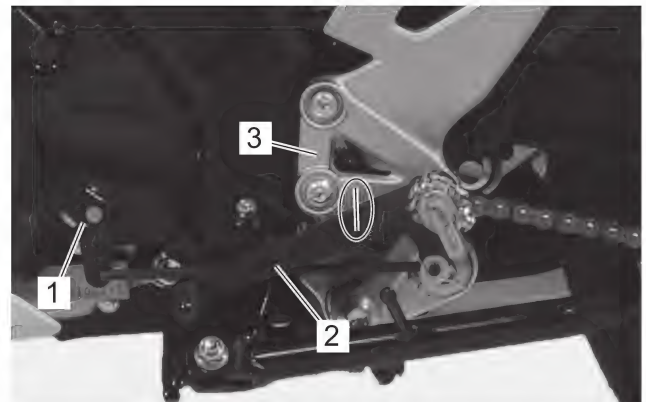


- 2) Remove gear shift link arm (1), footrest bolt and then remove the gearshift lever (2).

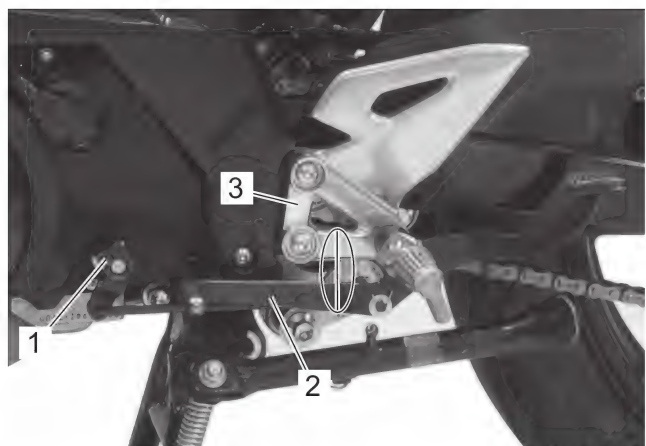
NOTE

Mark the position of the gearshift lever on the footrest bracket (3) before removing the link arm.

GSX R 150 Model



GSX S 150 Model



Installation

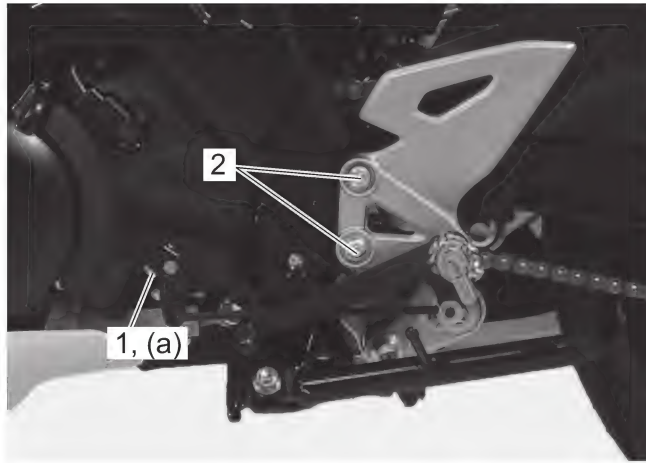
Install the gearshift lever in the reverse order of removal. Pay attention to the following points:

- Install the gearshift lever so that the gearshift lever height becomes the specified range. (Page 5B-13)
- Tighten gear shift link arm bolt (1) to the specified torque.

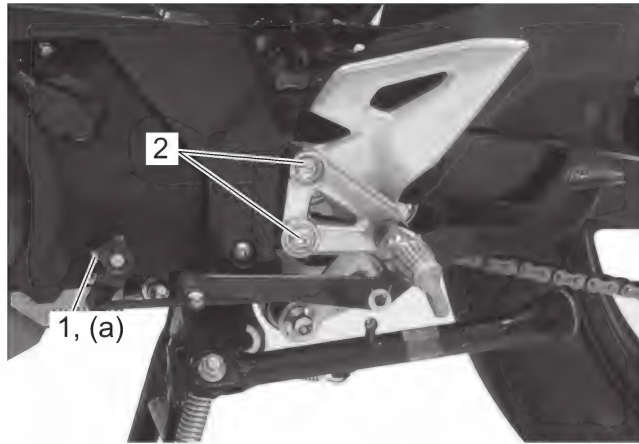
Tightening torque

Gear shift link arm bolt (a): 8 N·m (0.81 kgf-m, 5.90 lbf-ft)

- Tighten footrest bracket bolt lever bolt (2).

GSX R 150 Model

IH23K1520003-03

GSX S 150 Model

IH23K2520001-02

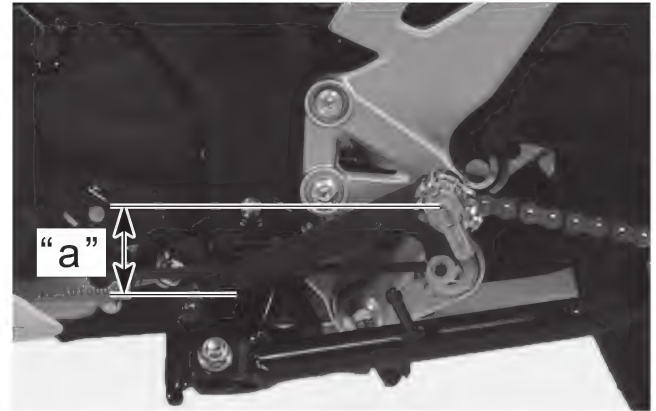
Gearshift Lever Height Inspection

BENH23K25206011

Inspect the gearshift lever height "a" between the pedal top face and footrest.

Gearshift lever height

[Standard]: 48 – 62 mm (1.88 – 2.44 in)

GSX R 150 Model

IH23K1520005-01

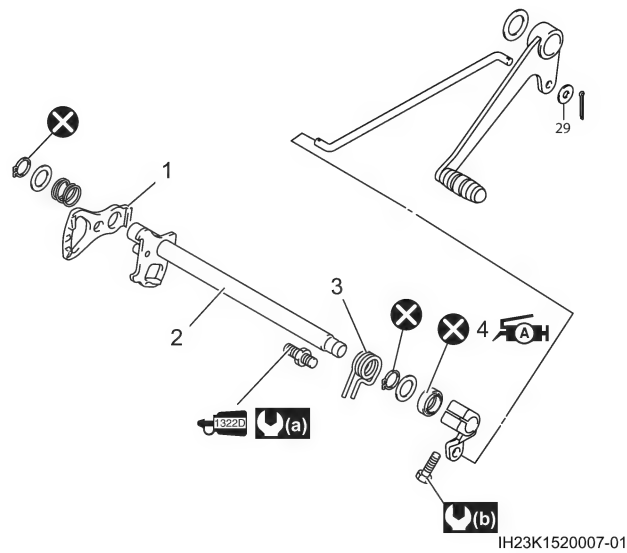
GSX S 150 Model

IH23K2520003-01

Gearshift Shaft / Gearshift Cam Plate
Components

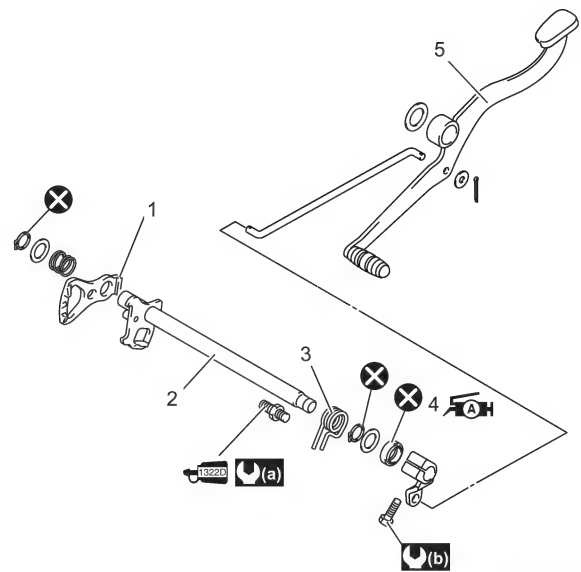
BENH23K25206012

GSX R 150 Model



1. Gearshift cam drive plate
2. Gearshift shaft
3. Gearshift shaft return spring
4. Gearshift shaft oil seal
5. Gearshift lever
(a) : 19 N·m (1.9 kgf·m, 14.0 lbf·ft)
(b) : 10 N·m (1.0 kgf·m, 7.5 lbf·ft)
: Apply grease.
: Apply thread lock to the thread part.
: Do not reuse.

GSX S 150 Model



IH23K2520004-01

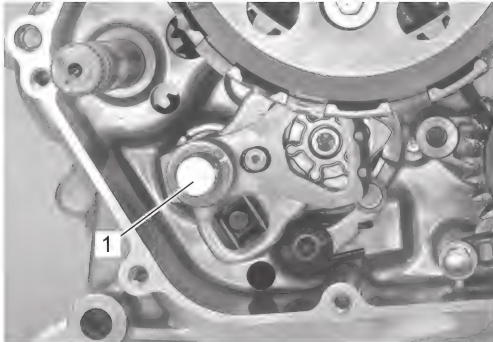
1. Gearshift cam drive plate
2. Gearshift shaft
3. Gearshift shaft return spring
4. Gearshift shaft oil seal
5. Gearshift lever
(a) : 19 N·m (1.9 kgf·m, 14.0 lbf·ft)
(b) : 10 N·m (1.0 kgf·m, 7.5 lbf·ft)
: Apply grease.
: Apply thread lock to the thread part.
: Do not reuse.

Gearshift Shaft / Gearshift Cam Plate Removal and Installation

BENH23K25206013

Removal

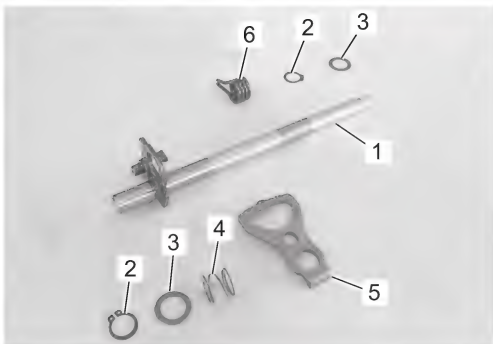
- 1) Remove the clutch cover. (Page 5C-6)
- 2) Remove the gearshift shaft assembly (1).



IG12K1520041-01

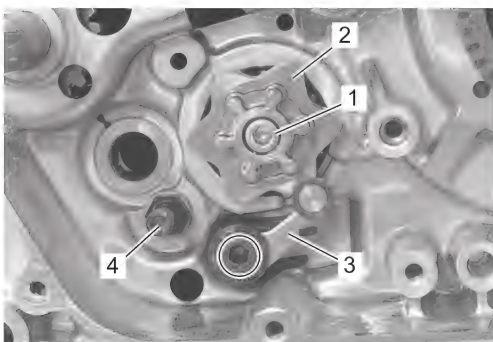
- 3) Remove the following parts from the gearshift shaft (1).
 - Snap ring (2)
 - Washer (3)
 - Spring (4)
 - Gearshift cam drive plate (5)
 - Gearshift shaft return spring (6)

Special tool
09900-06107



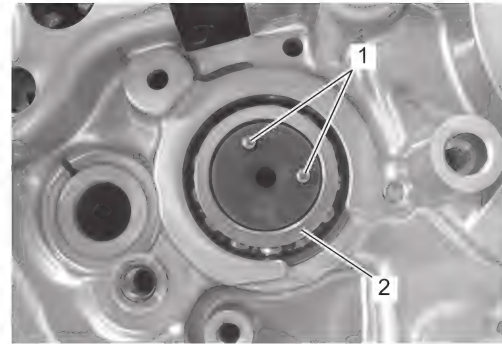
IG12K1520043-01

- 4) Remove the gearshift cam plate bolt (1) and gearshift cam plate (2).
- 5) Remove the gearshift cam stopper (3).
- 6) Remove the gearshift arm stopper (4).



IG12K1520044-01

- 7) Remove the gearshift cam plate pins (1) and gearshift cam bearing spacer (2).



IG12K1520045-02

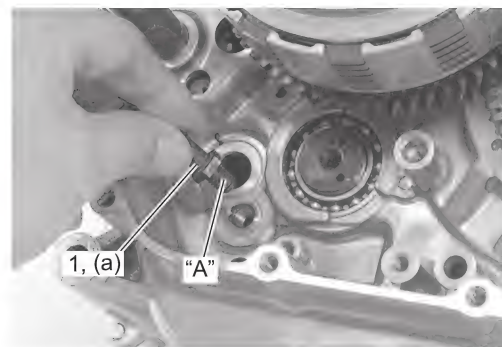
Installation

- 1) Apply a small quantity of thread lock to the gearshift arm stopper (1) and tighten it to the specified torque.

“A”: Thread lock cement 99000-32150 (THREAD LOCK CEMENT 1322D)

Tightening torque

Gearshift arm stopper (a): 19 N·m (1.9 kgf-m, 14.0 lbf-ft)



IG12K1520046-01

5B-16 Manual Transmission:

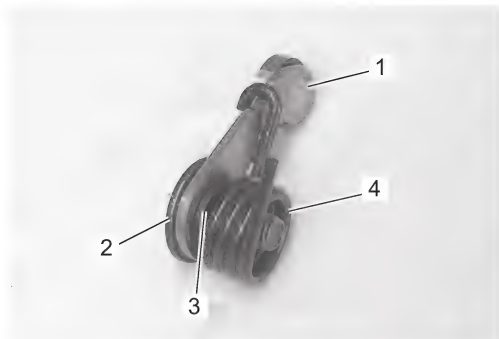
- 2) Install the gearshift cam stopper (1), bolt (2), washer (3) and spring (4).
- 3) Tighten the gearshift cam stopper bolt to the specified torque.

NOTE

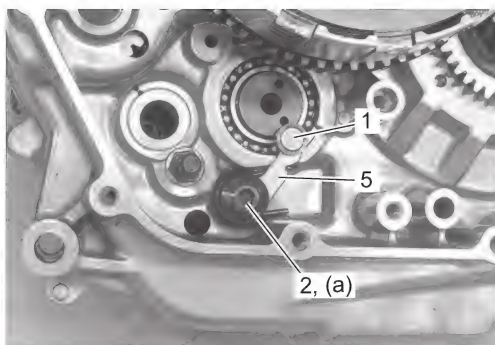
Hook the return spring end (5) to the gearshift cam stopper.

Tightening torque

Gearshift cam stopper bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

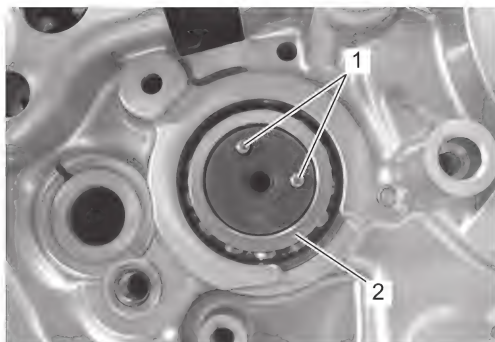


IG12K1520047-01



IG12K1520048-01

- 4) Install the gearshift cam plate pins (1) and gearshift cam bearing spacer (2).



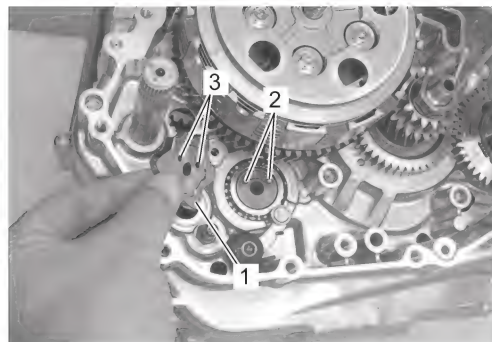
IG12K1520045-02

- 5) Check the gearshift cam stopper moves smoothly.
- 6) Locate the gearshift cam in the neutral position.

- 7) Install the gearshift cam plate (1).

NOTE

Align the gearshift cam plate pins (2) with the gearshift cam plate holes (3).



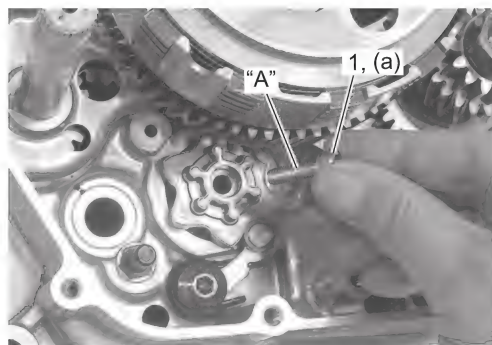
IG12K1520050-01

- 8) Apply a small quantity of thread lock to the gearshift cam plate bolt (1) and tighten it to the specified torque.

"A": Thread lock cement 99000-32150 (THREAD LOCK CEMENT 1322D)

Tightening torque

Gearshift cam plate bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

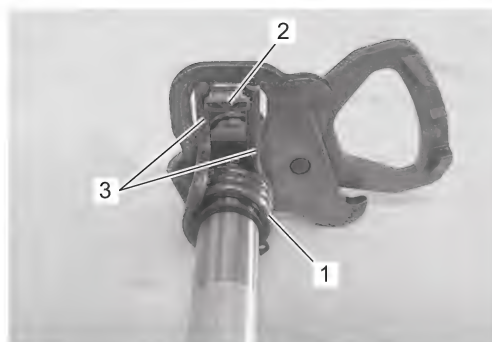


IG12K1520051-01

- 9) Install the gearshift shaft return spring (1).

NOTE

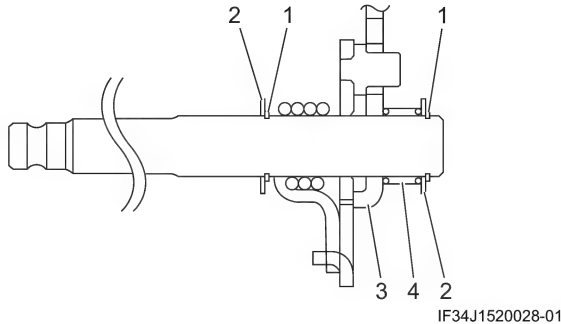
Position the stopper (2) of gearshift arm between the shaft return spring ends (3).



IG12K1520052-01

10) Install the following parts.

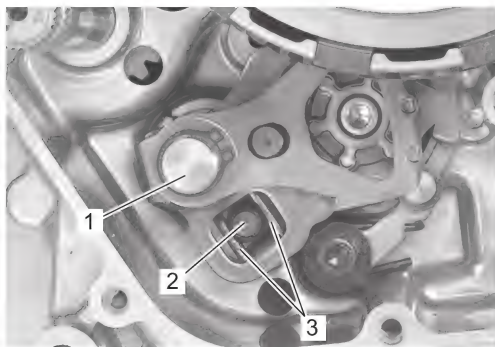
- New snap ring (1)
- Washer (2)
- Gearshift cam drive plate (3)
- Spring (4)



11) Install the gearshift shaft assembly (1).

NOTE

Pinch the gearshift arm stopper (2) with return spring ends (3).



12) Install the removed parts.

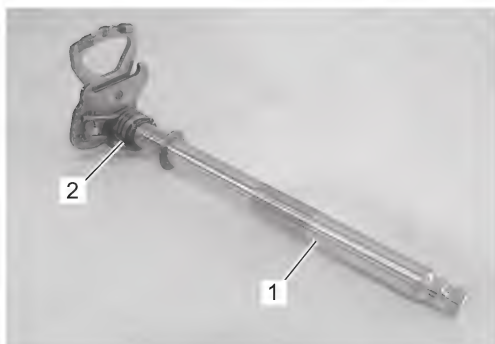
Gearshift Linkage Inspection

BENH23K25206014

Refer to "Gearshift Shaft / Gearshift Cam Plate Removal and Installation" (Page 5B-15).

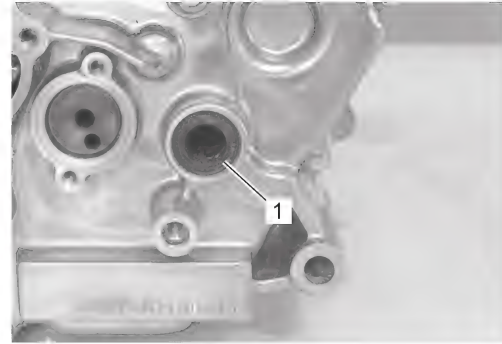
Gearshift Shaft

Check the gearshift shaft (1) for bend or wear. Check the return spring (2) for damage or fatigue. If any defects are found, replace the defective part(-s).



Gearshift Shaft Oil Seal

Inspect the gearshift shaft oil seal lip (1) for damage or wear. If any defect is found, replace the oil seal with a new one.



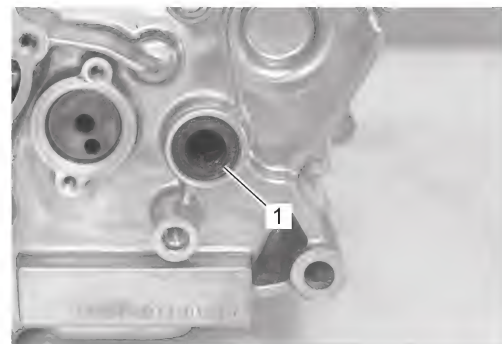
Gearshift Shaft Oil Seal Removal and Installation

BENH23K25206015

Refer to "Gearshift Shaft / Gearshift Cam Plate Removal and Installation" (Page 5B-15).

Removal

- 1) Remove the engine sprocket cover. Refer to "Engine Sprocket Removal and Installation" in Section 3A (Page 3A-4).
- 2) Remove the gearshift shaft. (Page 5B-15)
- 3) Remove the oil seal (1).



Installation

- 1) Install a new oil seal (1) with the special tool.

NOTE

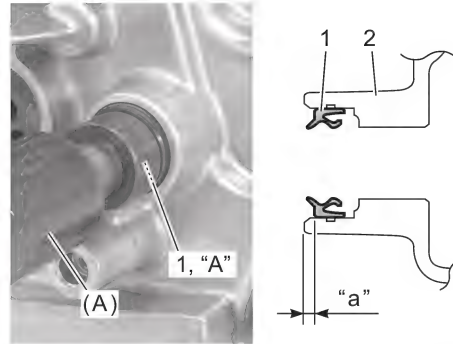
Install the gearshift shaft oil seal to the specified depth from the left crankcase end.

Special tool

(A): 09913-70210

- 2) Apply grease to the oil seal lip.

“A”: Grease 99000-25011 (SUZUKI SUPER GREASE A)



IG12K1520056-02

2. Left crankcase

“a”: 0 – 1 mm (0 – 0.03 in)

- 3) Install the removed parts.

Specifications

Tightening Torque Specifications

BENH23K25207001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Driveshaft oil seal retainer bolt	10	1.0	7.5	☞ (Page 5B-9)
Countershaft bearing retainer screw	8.5	0.87	6.30	☞ (Page 5B-10)
Gearshift cam bearing retainer screw	8.5	0.87	6.30	☞ (Page 5B-10)
GP switch mounting bolt	4.0	0.41	2.95	☞ (Page 5B-11)
Gear shift link arm bolt	8	0.81	5.90	☞ (Page 5B-12)
Gearshift arm stopper	19	1.9	14.0	☞ (Page 5B-15)
Gearshift cam stopper bolt	10	1.0	7.5	☞ (Page 5B-16)
Gearshift cam plate bolt	10	1.0	7.5	☞ (Page 5B-16)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Transmission Components” (Page 5B-2)

“Gearshift Shaft / Gearshift Cam Plate Components” (Page 5B-14)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K25208001

Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI SUPER GREASE A	P/No.: 99000-25011	☞ (Page 5B-9) / ☞ (Page 5B-18)
Thread lock cement	THREAD LOCK CEMENT 1322D	P/No.: 99000-32150	☞ (Page 5B-10) / ☞ (Page 5B-15) / ☞ (Page 5B-16)

NOTE

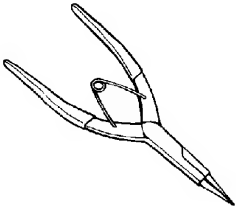
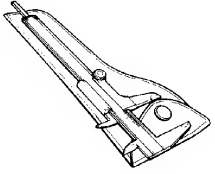
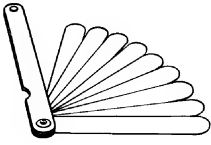
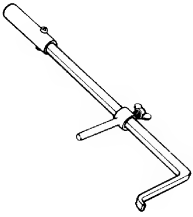
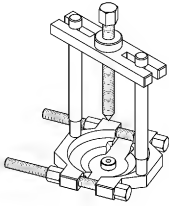
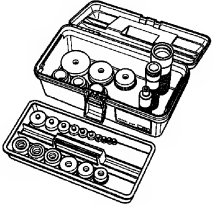
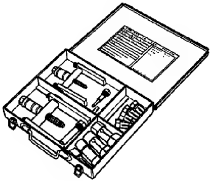
Required service material(s) is also described in:

“Transmission Components” (Page 5B-2)

“Gearshift Shaft / Gearshift Cam Plate Components” (Page 5B-14)

Special Tool

BENH23K25208002

09900-06107 Snap ring pliers (External) ☞ (Page 5B-5) / ☞ (Page 5B-5) / ☞ (Page 5B-15)		09900-20102 Vernier calipers (200 mm) ☞ (Page 5B-7) / ☞ (Page 5B-7)	
09900-20803 Thickness gauge ☞ (Page 5B-7)		09913-50121 Oil seal remover ☞ (Page 5B-8)	
09913-65850 Bearing puller ☞ (Page 5B-4)		09913-70210 Bearing installer set ☞ (Page 5B-8) / ☞ (Page 5B-8) / ☞ (Page 5B-8) / ☞ (Page 5B-9) / ☞ (Page 5B-9) / ☞ (Page 5B-9) / ☞ (Page 5B-10) / ☞ (Page 5B-18)	
09921-20240 Bearing remover set ☞ (Page 5B-8)			

Clutch

Precautions

Precautions for Clutch System

Refer to "General Precautions" in Section 00 (Page 00-1).

BENH23K25300001

Diagnostic Information and Procedures

Clutch System Symptom Diagnosis

BENH23K25304001

Condition	Possible cause	Correction / Reference Item
Noisy engine (Noise seems to come from the clutch)	Worn countershaft spline.	Replace countershaft. ☞(Page 5B-4)
	Worn clutch sleeve hub spline.	Replace clutch sleeve hub. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
	Worn clutch plate teeth.	Replace clutch plate. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
	Distorted clutch plates, driven and drive.	Replace. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
	Worn clutch release bearing.	Replace. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
	Weakened clutch springs.	Replace. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
	Weakened clutch dampers.	Replace primary driven gear. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
	Worn or rubbing primary gears.	Replace. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
Clutch slips	Clutch cable out of adjustment.	Adjust. ☞(Page 5C-3)
	Weakened clutch springs.	Replace. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
	Worn or distorted clutch pressure plate.	Replace. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)
	Distorted clutch plates, driven and drive.	Replace. • Removal: ☞(Page 5C-6) • Installation: ☞(Page 5C-9)

Condition	Possible cause	Correction / Reference Item
Clutch drags	Clutch cable out of adjustment.	Adjust. (Page 5C-3)
	Some clutch springs are weak, while others are not.	Replace. • Removal: (Page 5C-6) • Installation: (Page 5C-9)
	Worn or distorted clutch pressure plate.	Replace. • Removal: (Page 5C-6) • Installation: (Page 5C-9)
	Distorted clutch plates, driven and drive.	Replace. • Removal: (Page 5C-6) • Installation: (Page 5C-9)

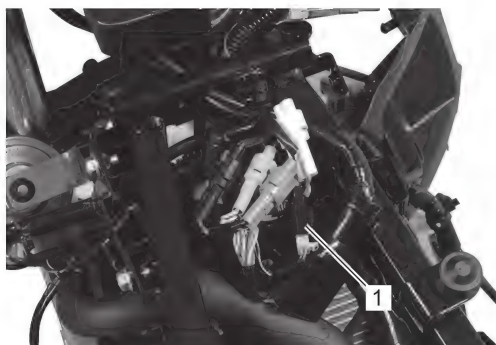
Repair Instructions

Clutch Lever Position Switch Inspection

BENH23K25306001

GSX R 150 Model

- 1) Remove headlight assembly. (Page 9B-2)
- 2) Disconnect clutch lever position switch lead wire coupler (1).



IH23K1530001-01

- 3) Inspect clutch lever position switch for continuity with tester.
If any defect is found, replace switch with a new one.

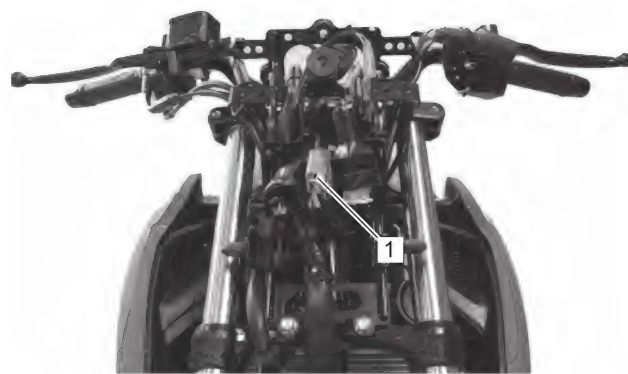
Color Position	Terminal (O)	Terminal (W/B)
OFF		
ON		

IG12K1530002-01

- 4) Connect clutch lever position switch lead wire.
- 5) Install headlight assembly. (Page 9B-2)

GSX S 150 Model

- 1) Remove headlight assembly. (Page 9B-2)
- 2) Disconnect clutch lever position switch lead wire coupler (1).



IH23K2530001-01

- 3) Inspect clutch lever position switch for continuity with tester.
If any defect is found, replace switch with a new one.

Color Position	Terminal (O)	Terminal (W/B)
OFF		
ON		

IG12K1530002-01

- 4) Connect clutch lever position switch lead wire.
- 5) Install headlight assembly. (Page 9B-2)

Clutch Cable Inspection

BENH23K25306002

Check that clutch lever moves smoothly. If it does not move smoothly, lubricate clutch cable.

Clutch Cable Play On-Vehicle Inspection and Adjustment

BENH23K25306003

Inspection

Inspect clutch cable play "a" at the clutch lever end.
Adjust clutch cable play if necessary.

Clutch cable play

[Standard]: 10 – 14 mm (0.4 – 0.5 in)



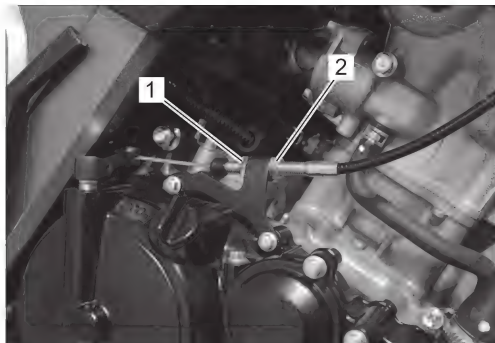
IH23K1530002-02

Adjustment

- 1) Loosen lock-nut (1), and adjust clutch cable by turning adjuster (2) to obtain free play "a" at clutch lever end.

Clutch cable play

[Standard]: 10 – 14 mm (0.4 – 0.5 in)



IH23K1530003-02



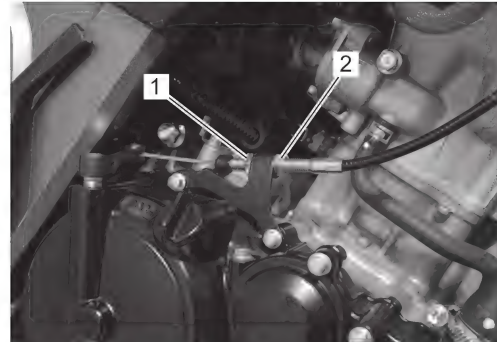
IH23K1530002-02

Clutch Cable Removal and Installation

BENH23K25306004

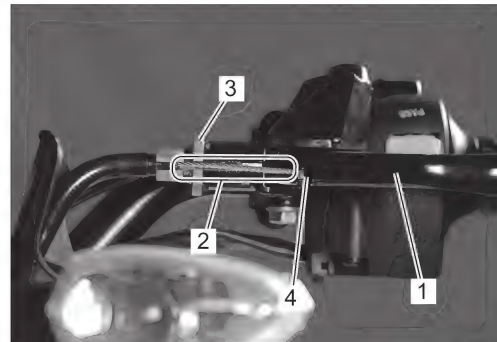
Removal

- 1) Open front box lid.
- 2) Remove the following parts.
 - Headlight assembly: (Page 9B-2)
 - Right under cowling: (Page 9D-25)
- 3) Fully loosen the lock-nut (1) and adjuster (2).



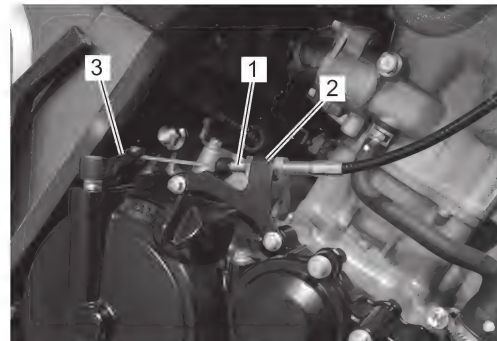
IH23K1530003-02

- 4) Align clutch lever (1), cable adjuster (2) and lock nut (3) with the cutaway.
- 5) Disconnect clutch cable end (4) from clutch lever.



IH23K1530005-01

- 6) Remove clutch cable (1) from clutch cable stopper (2), and then disconnect clutch cable end from clutch release arm (3).




IH23K1530004-01

- 7) Remove the clutch cable.

Installation

Install clutch cable in the reverse order of removal. Pay attention to the following points:

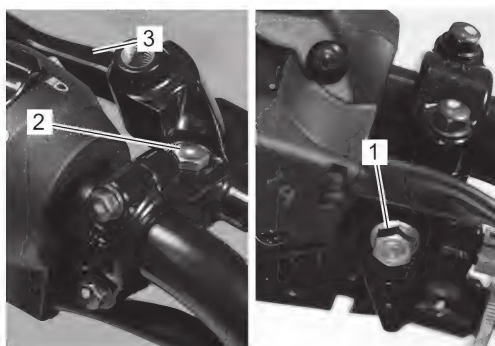
- Route clutch cable properly. Refer to "Throttle Cable Routing Diagram" in Section 1D (Page 1D-1).
- Adjust clutch cable play.  (Page 5C-3)

Clutch Lever Removal and Installation

BENH23K25306005

Removal

- 1) Disconnect clutch cable from clutch lever. Refer to "Clutch Cable Removal and Installation" (Page 5C-3).
- 2) Remove clutch lever pivot nut (1) and bolt (2), and then remove clutch lever (3).



IH23K1530006-01

- 3) Remove clutch lever holder. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-5).

Installation

Install clutch lever in the reverse order of removal. Pay attention to the following points:

- Install clutch lever holder securely. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-5).
- Apply grease to the clutch lever pivot bolt.

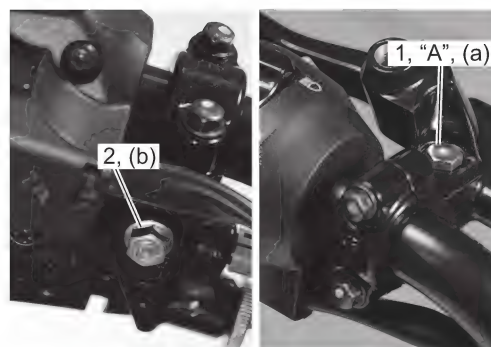
"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)

- Tighten clutch lever pivot bolt (1) and new clutch lever pivot nut (2) to the specified torque.

Tightening torque

Clutch lever pivot bolt (a): 6.5 N·m (0.66 kgf-m, 4.80 lbf-ft)

Clutch lever pivot nut (b): 6.5 N·m (0.66 kgf-m, 4.80 lbf-ft)

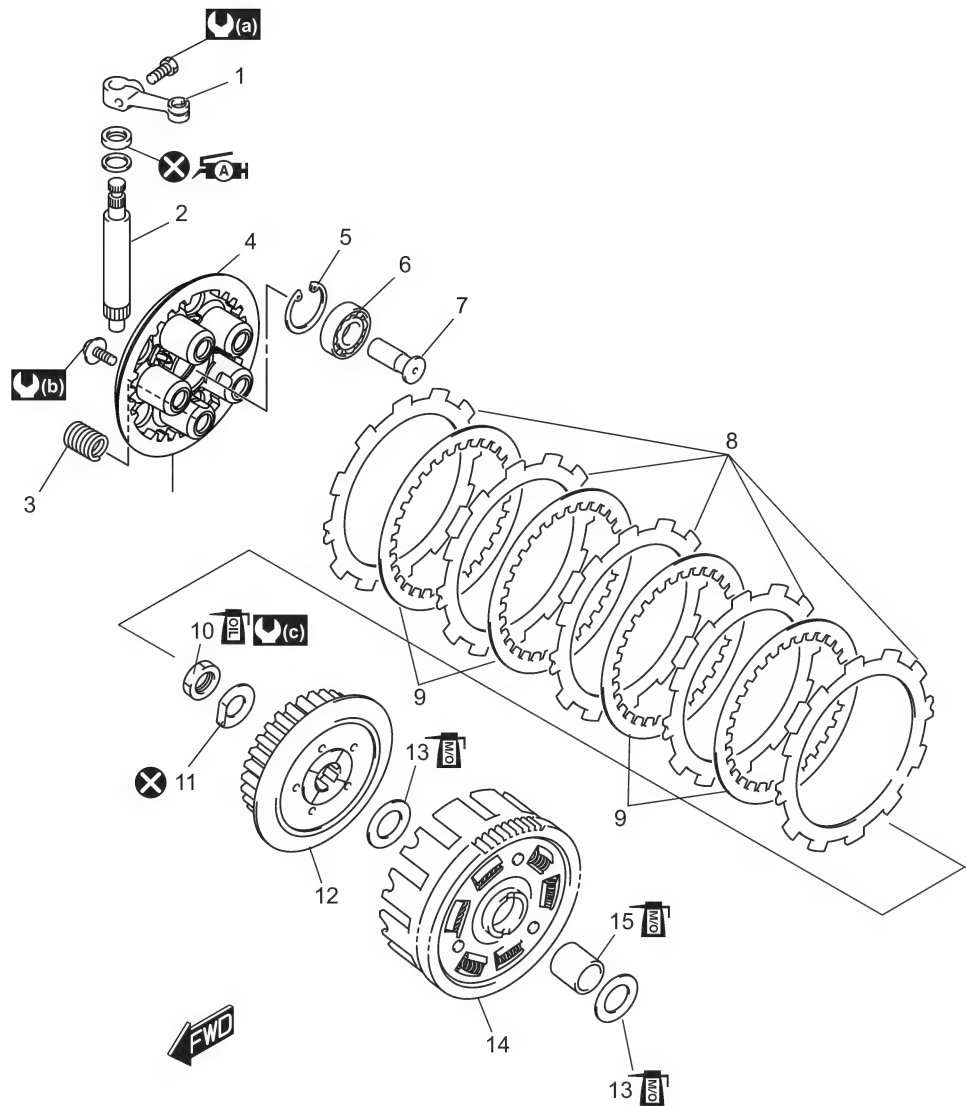


IH23K1530007-01








- Adjust clutch cable play.  (Page 5C-3)

Clutch Components

BENH23K25306006



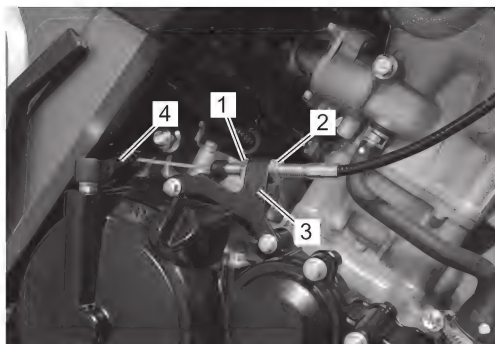
IH23K1530008-01

1. Clutch release arm	9. Clutch driven plate	 : 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft)
2. Clutch release camshaft	10. Clutch sleeve hub nut	 : 70 N·m (7.1 kgf-m, 52.0 lbf-ft)
3. Clutch spring	11. Lock washer	 : Apply grease.
4. Clutch pressure plate	12. Clutch sleeve hub	 : Apply engine oil.
5. Circlip	13. Thrust washer	 : Apply molybdenum oil solution.
6. Bearing	14. Primary driven gear assembly	 : Do not reuse.
7. Clutch release rack	15. Spacer	
8. Clutch drive plate	 : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)	

Clutch Removal

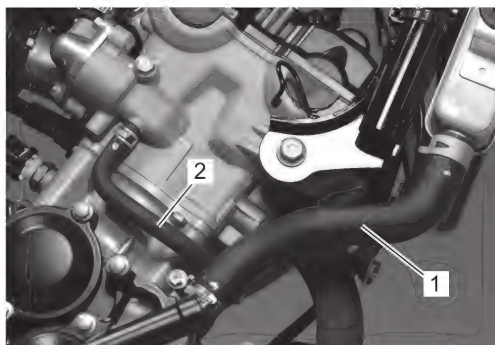
BENH23K25306007

- 1) Drain engine oil. (Page 1E-5)
- 2) Drain engine coolant. Refer to "Engine Coolant Replacement" in Section 1F (Page 1F-5).
- 3) Remove the following parts.
 - Rear brake pedal: (Page 4A-23)
 - Right front footrest: (Page 9E-4)
- 4) Fully loosen lock-nut (1) and adjuster (2).
- 5) Remove clutch cable stopper (3) and clutch release arm (4).



IH23K1530010-01

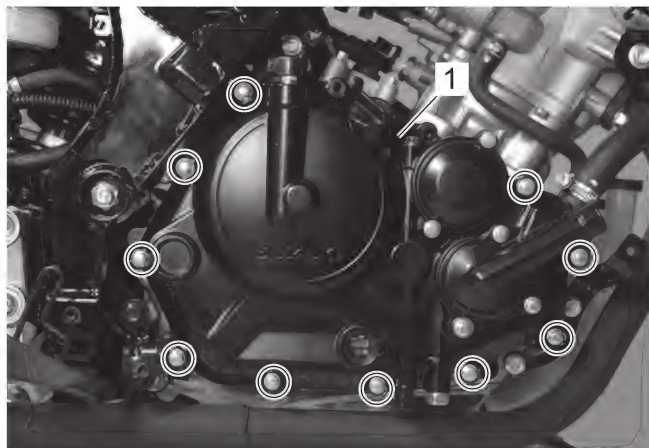
- 6) Disconnect radiator outlet hose (1) and bypass hose (2).



IH23K1530011-01

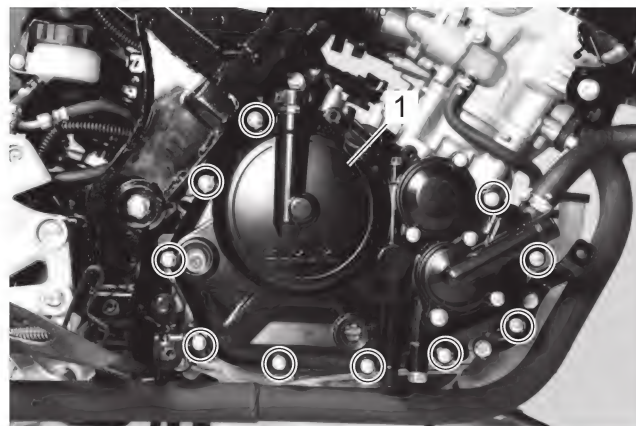
- 7) Remove clutch cover (1).

GSX R 150 Model



IH23K1530012-02

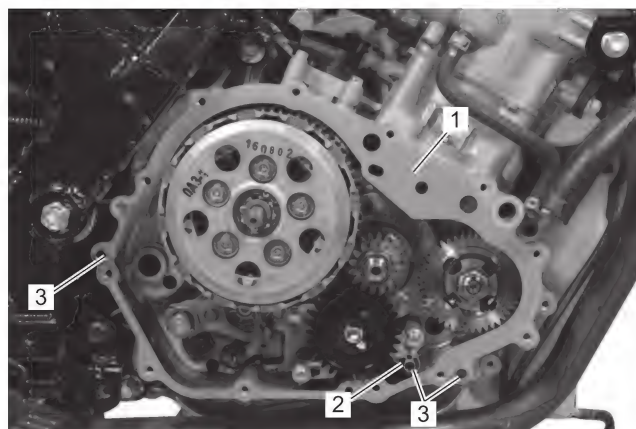
GSX S 150 Model



IH23K2530002-01

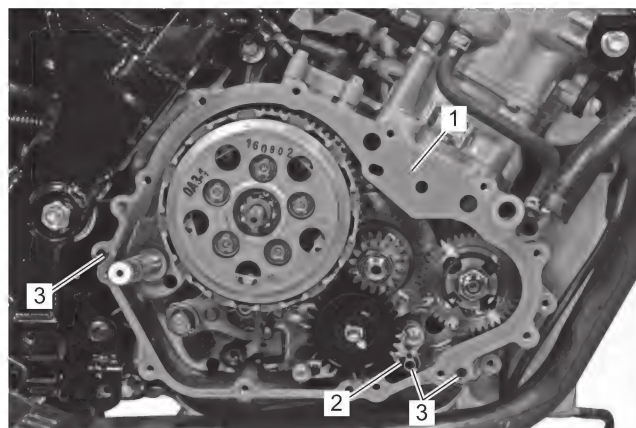
- 8) Remove gasket (1), O-ring (2) and dowel pins (3).

GSX R 150 Model



IH23K1530018-02

GSX S 150 Model



IH23K2530003-02

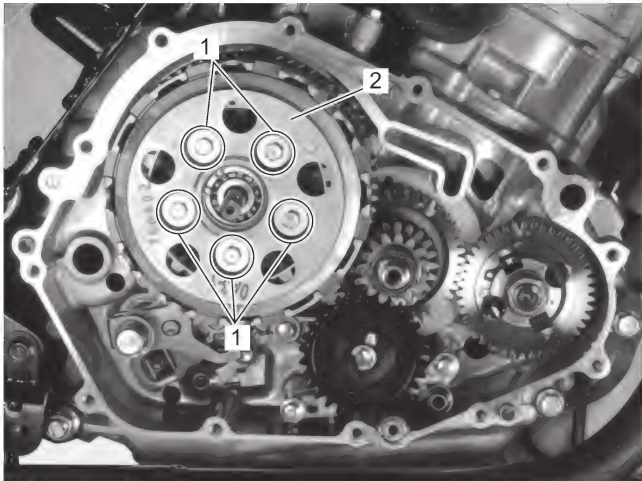
5C-7 Clutch:

- 9) Remove clutch spring set bolts (1), clutch springs and clutch pressure plate (2).

NOTE

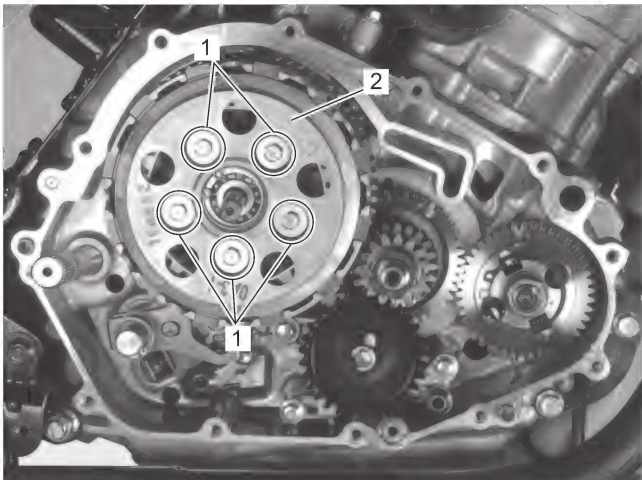
Loosen the clutch spring set bolts little by little and diagonally.

GSX R 150 Model



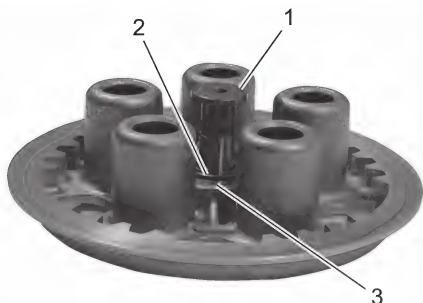
IH23K1530019-01

GSX S 150 Model



IH23K2530004-01

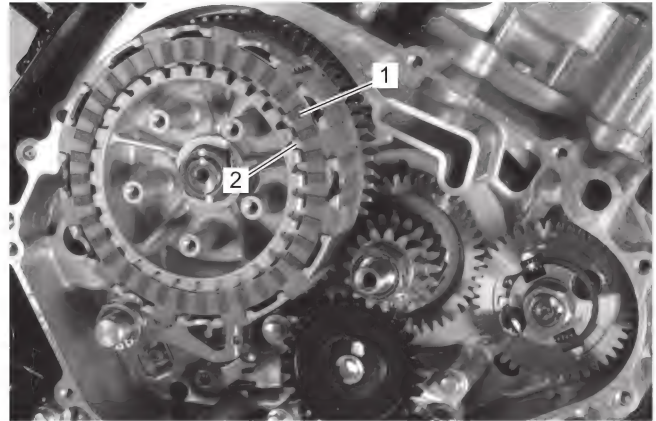
- 10) Remove clutch release rack (1), bearing (2) and circlip (3) from the clutch pressure plate.



IH23K1530017-02

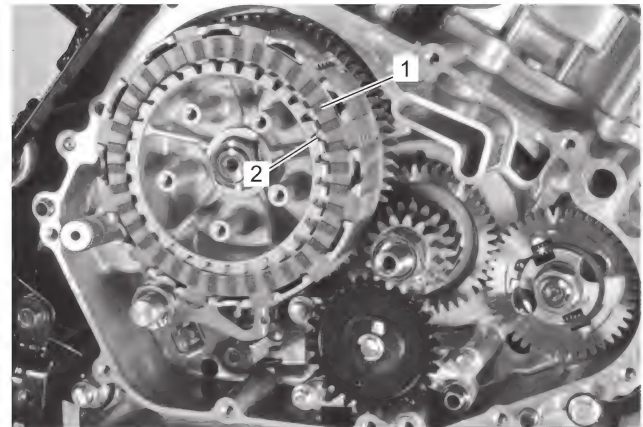
- 11) Remove clutch drive plates (1) and driven plates (2).

GSX R 150 Model



IH23K1530020-01

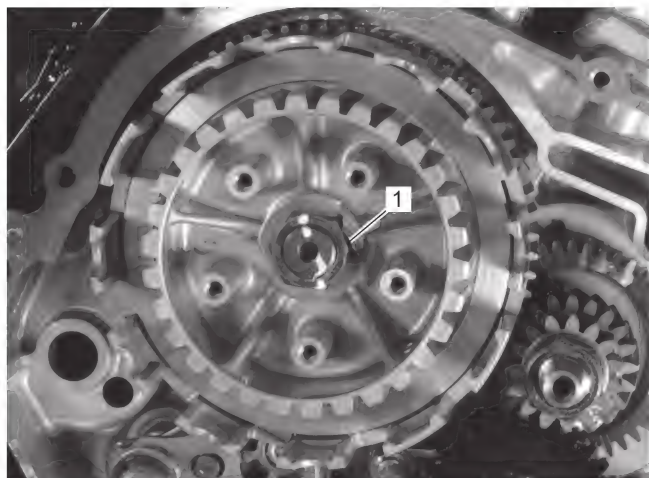
GSX S 150 Model



IH23K2530006-01

12) Flatten lock washer (1).

GSX R 150 Model



IH23K1530021-01

GSX S 150 Model

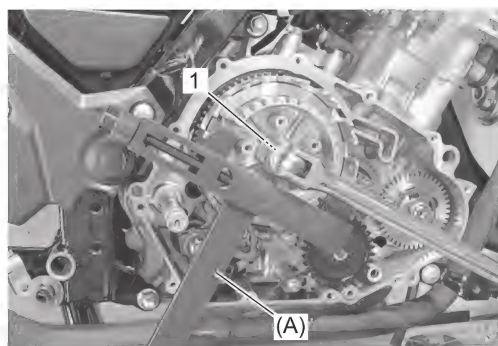


IH23K2530005-01

13) Hold clutch sleeve hub with the special tool and remove clutch sleeve hub nut (1).

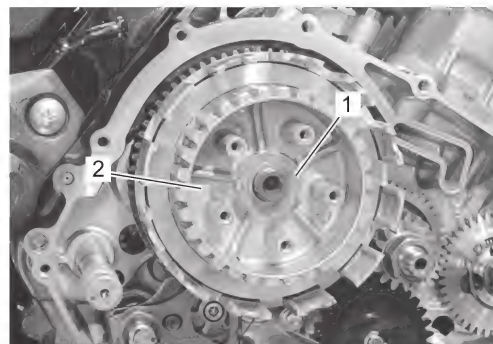
Special tool

(A): 09920-53740



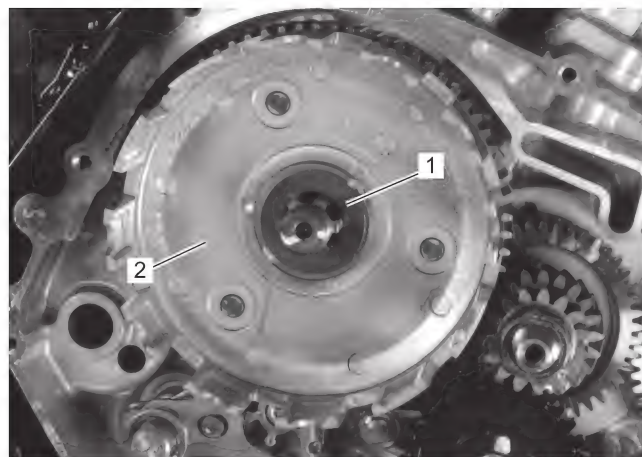
IG12K1530018-01

14) Remove lock washer (1) and clutch sleeve hub (2).



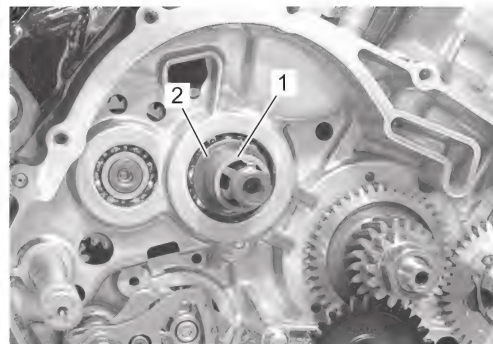
IG12K1530019-01

15) Remove thrust washer (1) and primary driven gear assembly (2).



IH23K1530022-01

16) Remove spacer (1) and thrust washer (2).



IG12K1530021-01

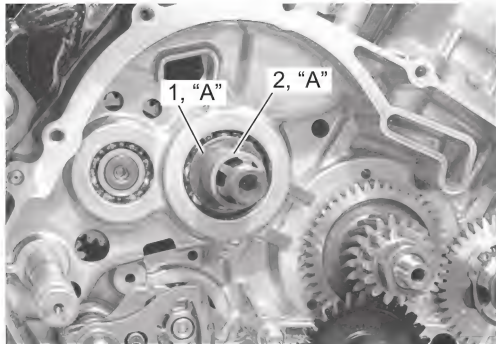
Clutch Installation

BENH23K25306008

- 1) Apply molybdenum oil solution to the spacer side of the thrust washer (1) and outside of the spacer (2).

“A”: Assembly lubrication (Molybdenum oil solution)

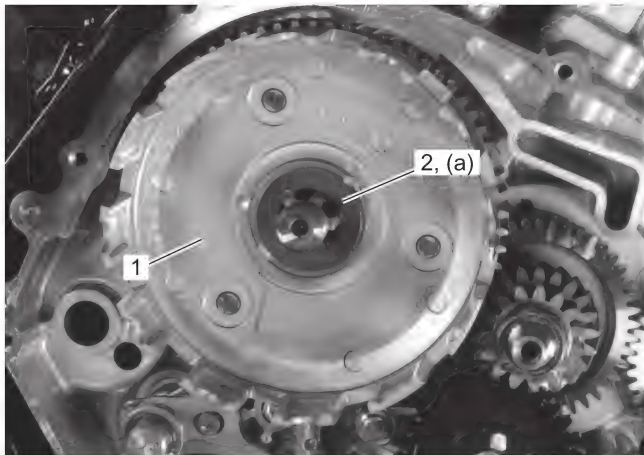
- 2) Install the thrust washer and spacer.



IG12K1530022-02

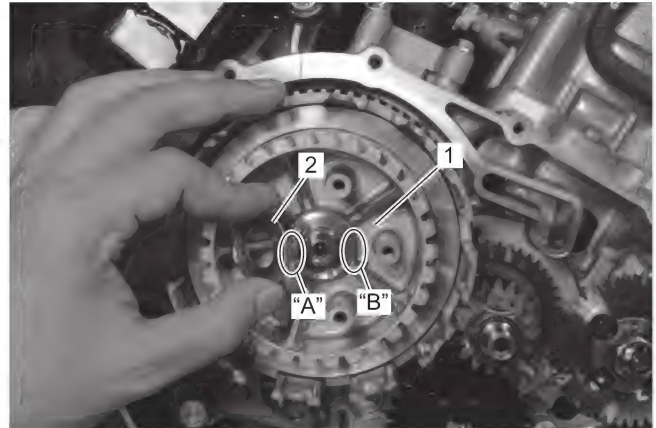
- 3) Install the primary driven gear assembly (1).
- 4) Apply molybdenum oil solution to the primary driven gear assembly side of the thrust washer (2).

“A”: Assembly lubrication (Molybdenum oil solution)



IH23K1530023-01

- 5) Install clutch sleeve hub (1), and then install a new lock washer (2) so that section “A” of lock washer and section “B” of clutch sleeve hub are aligned.



IH23K1530024-01

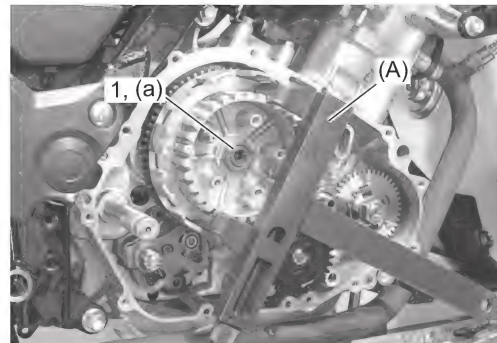
- 6) Apply engine oil to contacting surface and thread part of clutch sleeve hub nut and install it.
- 7) Hold clutch sleeve hub with the special tool and tighten clutch sleeve hub nut (1) to specified torque.

Special tool

(A): 09920-53740

Tightening torque

Clutch sleeve hub nut (a): 70 N·m (7.1 kgf-m, 52.0 lbf-ft)

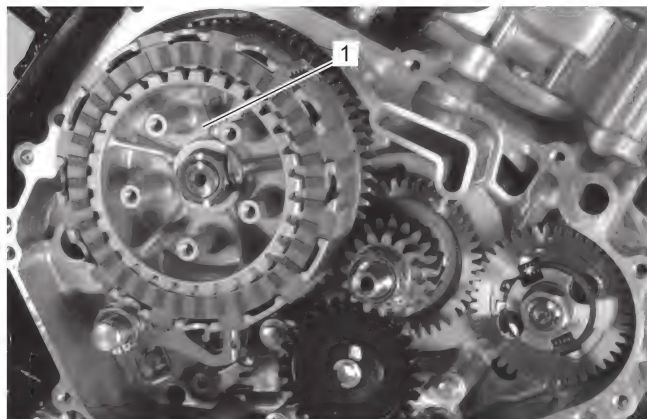


IG12K1530026-01

- 8) Bend the lock washer to lock nut securely.
- 9) Apply engine oil to the clutch drive plates and driven plates.

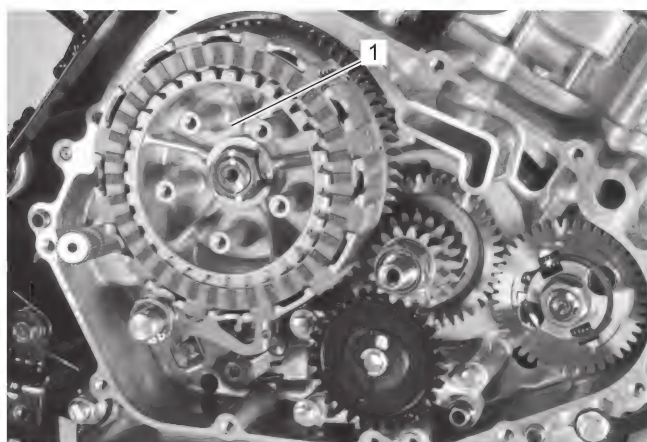
- 10) Insert clutch drive plates and driven plates one by one into the clutch sleeve hub (1) in the prescribed order.

GSX R 150 Model

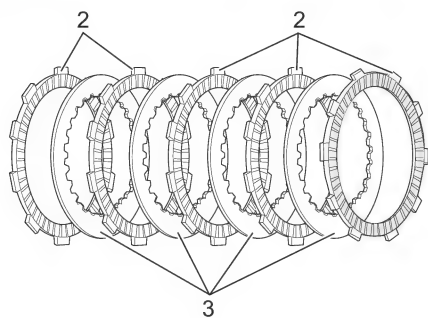


IH23K1530025-01

GSX S 150 Model



IH23K2530007-01

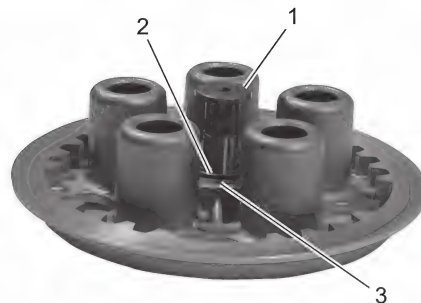


IG12K1530028-01

2. Clutch drive plate

3. Clutch driven plate

- 11) Apply engine oil to the bearing.
12) Install circlip (1), bearing (2) and clutch release rack (3) into clutch pressure plate (4).



IH23K1530017-02

- 13) Install clutch pressure plate (1), clutch springs and clutch spring set bolts (2).
14) Tighten clutch spring set bolts to specified torque.

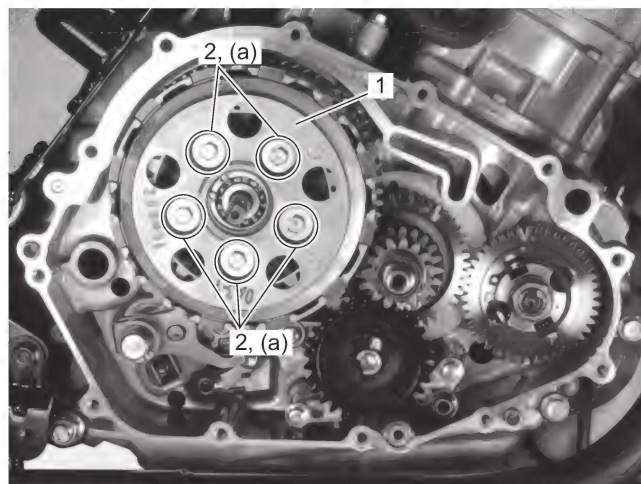
NOTE

Tighten clutch spring set bolts little by little and diagonally.

Tightening torque

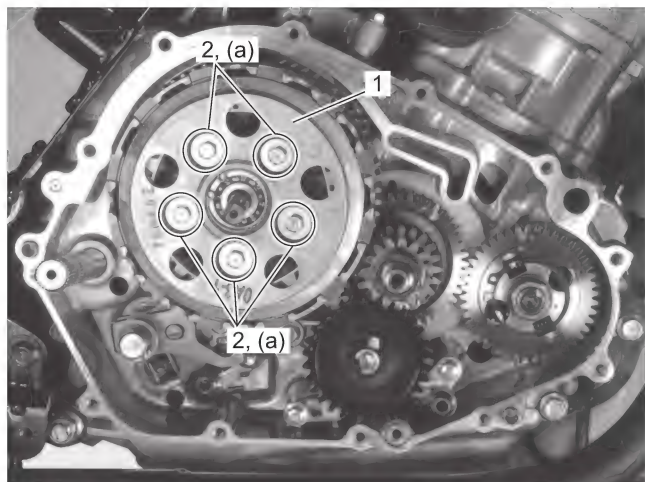
Clutch spring set bolt (a): 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft)

GSX R 150 Model



IH23K1530026-01

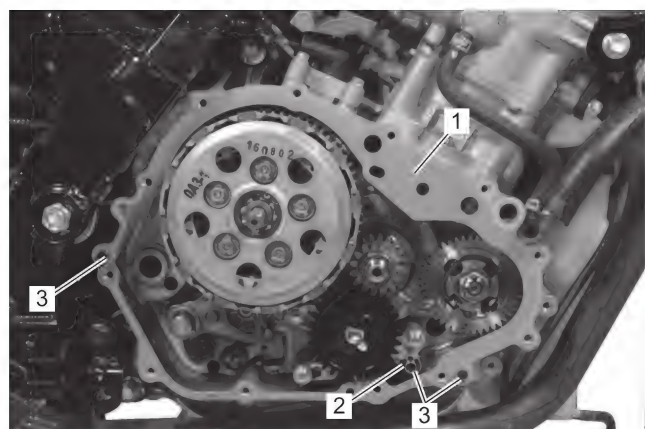
GSX S 150 Model



IH23K2530008-01

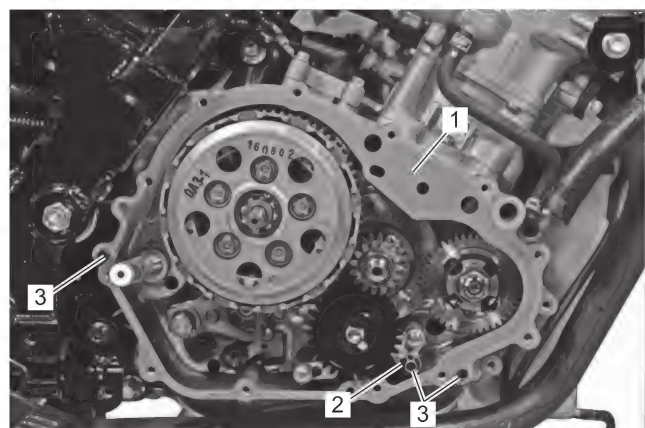
- 15) Install a new gasket (1), a new O-ring (2) and dowel pins (3).

GSX R 150 Model



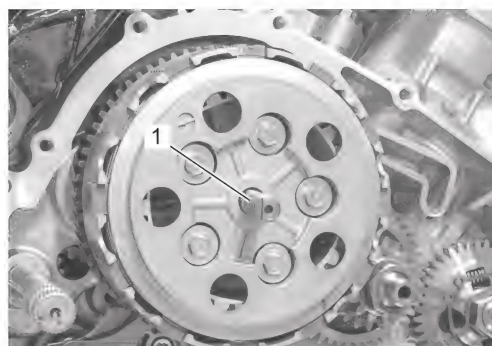
IH23K1530018-02

GSX S 150 Model



IH23K2530003-02

- 16) Apply engine oil to clutch release rack gear (1) and face the gear backward.



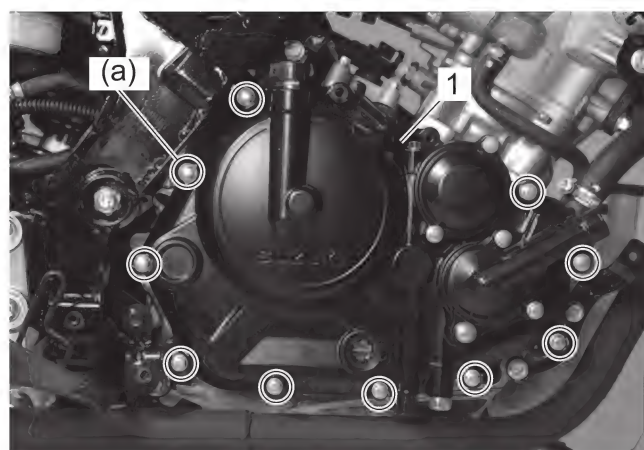
IG12K1530032-01

- 17) Install clutch cover (1) and tighten the bolts to specified torque.

Tightening torque

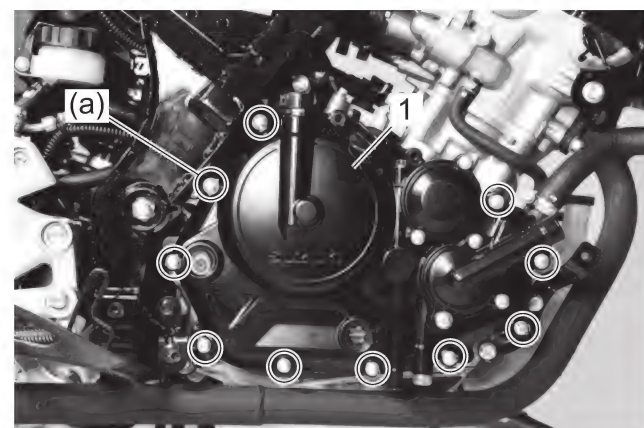
Clutch cover bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

GSX R 150 Model



IH23K1530027-01

GSX S 150 Model

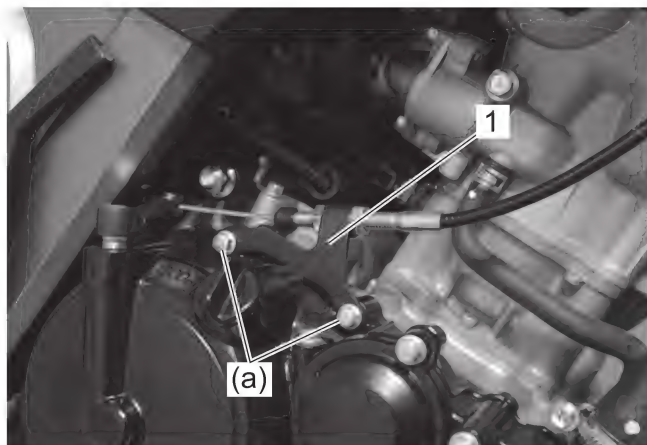


IH23K2530009-01

- 18) Install clutch cable stopper (1) and tighten the bolts to specified torque.

Tightening torque

Clutch cable stopper bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IH23K1530013-02

- 19) Install clutch release arm (1).

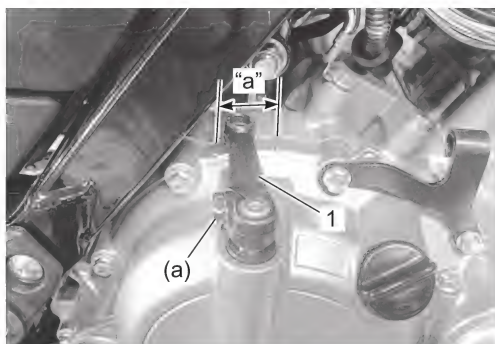
NOTE

Remove any play of clutch release camshaft by turning it clockwise, and then install clutch release arm to release camshaft within the range "a" shown in the figure.

- 20) Tighten clutch release arm bolt to specified torque.

Tightening torque

Clutch release arm bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IG12K1530035-01

- 21) Install the removed parts.
22) Install clutch cable and adjust clutch cable play.
☞ (Page 5C-3)

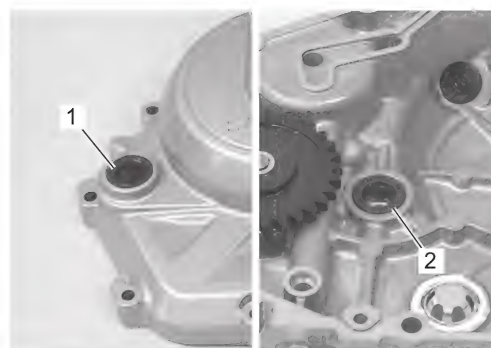
Clutch Cover Disassembly and Reassembly

BENH23K25306009

Refer to "Clutch Removal" (Page 5C-6) and "Clutch Installation" (Page 5C-9).

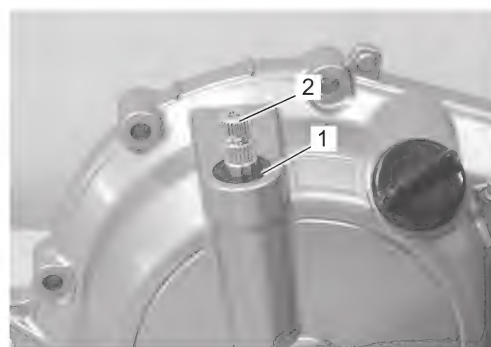
Disassembly

- 1) Remove kick starter shaft oil seal (1) (if equipped) and crankshaft oil seal (2).



IG12K1530036-02

- 2) Pull out clutch release camshaft oil seal (1) and washer with clutch release camshaft (2).



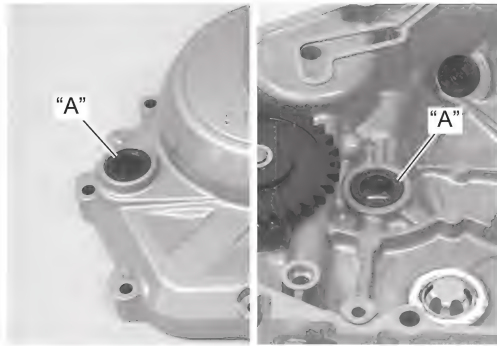
IG12K1530037-01

5C-13 Clutch:

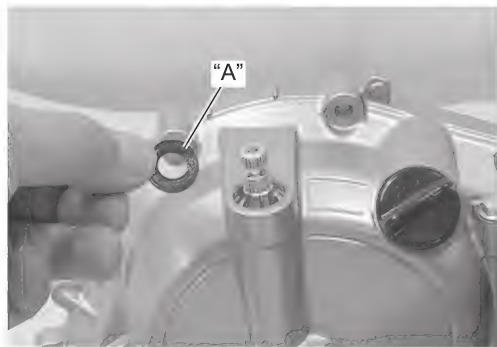
Reassembly

Reassemble clutch cover component part in reverse order of disassembly. Pay attention to the following points:

- Apply grease to the lip of new oil seals.
- "A": Grease 99000-25011 (SUZUKI SUPER GREASE A)**
- Install the oil seal until it seats in the clutch cover hole.

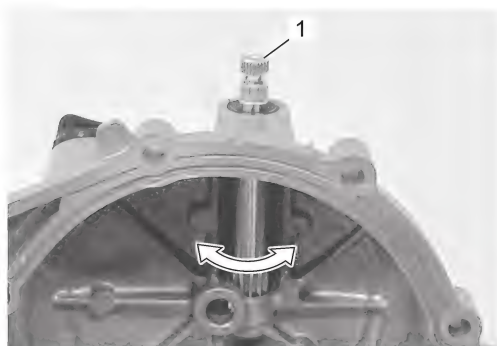


IG12K1530038-01



IG12K1530039-01

- After installing clutch release camshaft (1), check clutch release camshaft operation.



IG12K1530040-01

Clutch Parts Inspection

BENH23K25306010

Refer to "Clutch Removal" (Page 5C-6), "Clutch Installation" (Page 5C-9) and "Clutch Cover Disassembly and Reassembly" (Page 5C-12).

Clutch Drive / Driven Plate

Measure thickness of drive plates with a vernier calipers. If drive plate thickness is found to have reached the limit, replace it with a new one.

NOTE

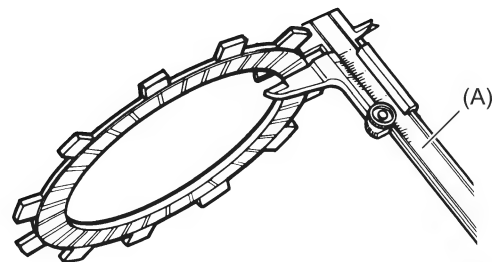
Wipe off engine oil from the drive and driven plates with a clean rag.

Special tool

(A): 09900-20102

Drive plate thickness

[Limit]: 2.6 mm (0.10 in)



IE31J1530086-01

Measure the claw width of drive plates with vernier calipers. Replace drive plates that have worn down to the limit.

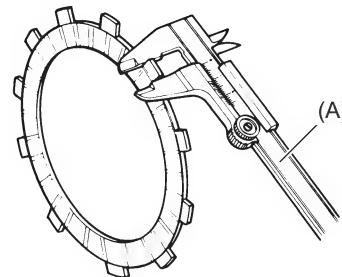
Special tool

(A): 09900-20102

Drive plate claw width

With groove [Limit]: 11.4 mm (0.449 in)

Without groove [Limit]: 11.3 mm (0.445 in)



IE31J1530087-01

Measure each driven plate for distortion with a thickness gauge and surface plate.

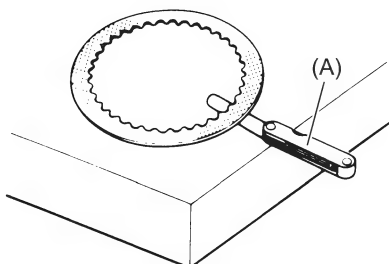
Replace driven plates which exceed the limit.

Special tool

(A): 09900-20803

Driven plate distortion

[Limit]: 0.10 mm (0.004 in)



IE31J1530088-01

Clutch Spring

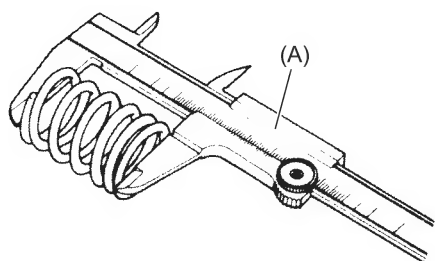
Measure free length of each coil spring with a vernier calipers, and compare the length with the specified limit. Replace all springs if any spring is not within the limit.

Special tool

(A): 09900-20102

Clutch spring free length

[Limit]: 30.9 mm (1.22 in)



IE31J1530089-01

Clutch Release Bearing

Inspect clutch release bearing (1) for any abnormality, especially cracks. When removing the bearing from clutch, decide whether it can be reused or if it should be replaced.

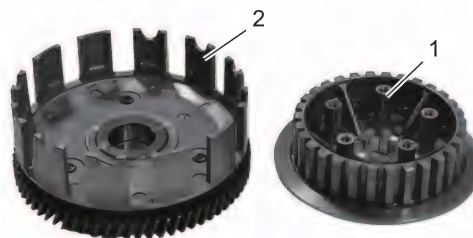
Smooth engagement and disengagement of the clutch depends on the condition of this bearing.



IH23K1530015-01

Clutch Sleeve Hub / Primary Driven Gear Assembly

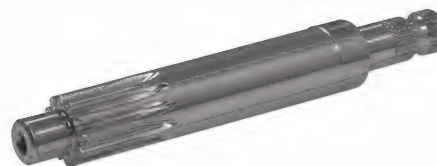
Inspect the slot of clutch sleeve hub (1) and primary driven gear assembly (2) for damage or wear caused by clutch plates. If necessary, replace it with a new one. Inspect springs of primary driven gear assembly for any damages. If necessary, replace primary driven gear assembly with a new one.



IH23K1530014-01

Clutch Release Camshaft

Inspect clutch release camshaft for wear or bend. If necessary, replace it with a new one.



IH23K1530016-01

Specifications

Tightening Torque Specifications

BENH23K25307001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Clutch lever pivot bolt	6.5	0.66	4.80	☞ (Page 5C-4)
Clutch lever pivot nut	6.5	0.66	4.80	☞ (Page 5C-4)
Clutch sleeve hub nut	70	7.1	52.0	☞ (Page 5C-9)
Clutch spring set bolt	5.0	0.51	3.70	☞ (Page 5C-10)
Clutch cover bolt	10	1.0	7.5	☞ (Page 5C-11)
Clutch cable stopper bolt	10	1.0	7.5	☞ (Page 5C-12)
Clutch release arm bolt	10	1.0	7.5	☞ (Page 5C-12)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Clutch Components” (Page 5C-5)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K25308001

Material	SUZUKI recommended product or Specification		Note
Assembly lubrication	Molybdenum oil solution	—	☞ (Page 5C-9) / ☞ (Page 5C-9)
Grease	SUZUKI SUPER GREASE A	P/No.: 99000–25011	☞ (Page 5C-4) / ☞ (Page 5C-13)

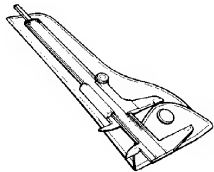
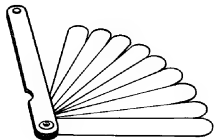
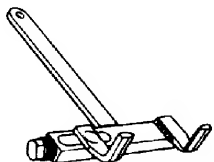
NOTE

Required service material(s) is also described in:

“Clutch Components” (Page 5C-5)

Special Tool

BENH23K25308002

09900–20102 Vernier calipers (200 mm) ☞ (Page 5C-13) / ☞ (Page 5C-13) / ☞ (Page 5C-14)		09900–20803 Thickness gauge ☞ (Page 5C-14)	
09920–53740 Clutch sleeve hub holder ☞ (Page 5C-8) / ☞ (Page 5C-9)			

Section 6

Steering

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Precautions

Precautions

Precautions for Steering

Refer to “General Precautions” in Section 00 (Page 00-1).

BENH23K26000001

Steering General Diagnosis

Diagnostic Information and Procedures

Steering Symptom Diagnosis

BENH23K26104001

Condition	Possible cause	Correction / Reference Item
Heavy steering	Over tightened steering stem nut.	Adjust. (Page 6B-16)
	Broken steering stem steel ball/race.	Replace. (Page 6B-26)
	Distorted steering stem.	Replace. (Page 6B-20)
	Not enough pressure in tires.	Adjust. (Page 2D-11)
Wobbly handlebar	Loss of balance between right and left front forks.	Replace fork, adjust fork oil level or replace fork spring. <ul style="list-style-type: none"> • Replace fork: (Page 2B-2) • Adjust fork oil level or replace fork spring: (Page 2B-5)
	Distorted front fork.	Repair or replace. (Page 2B-2)
	Distorted front axle or crooked tire.	Replace. (Page 2D-3) (Page 2D-11)
	Loose steering stem nut.	Adjust. (Page 6B-16)
	Worn or incorrect tire.	Replace. (Page 2D-11)
	Incorrect tire pressure.	Adjust. (Page 2D-11)
	Worn steering stem steel ball/race.	Replace. (Page 6B-26)

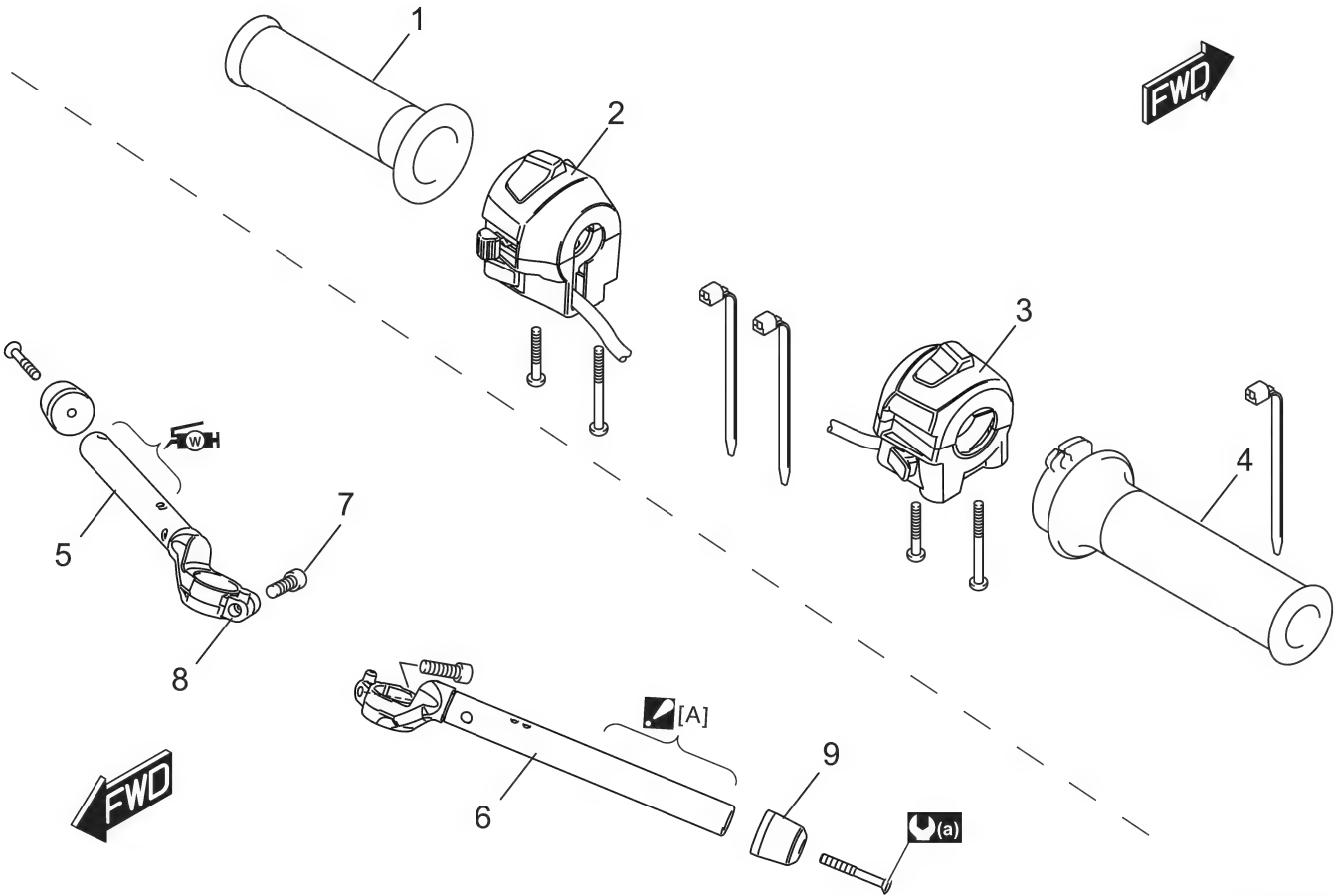
Steering / Handlebar

Repair Instructions




Handlebar Components

BENH23K26206001

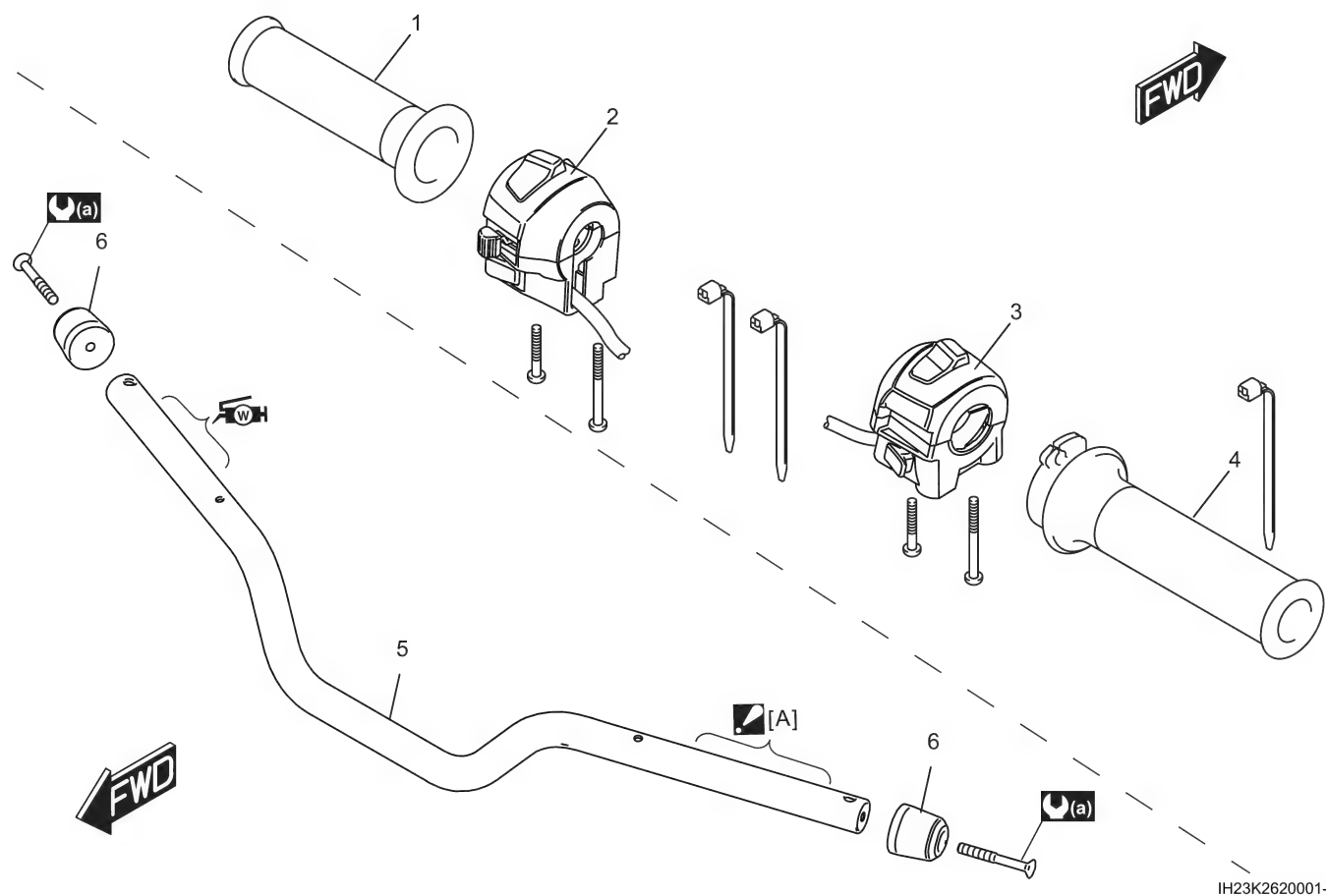
GSX R 150 Model



IH23K1620001-02

 [A]: Apply handle grip glue.	5. Right handlebar	 (a) : 4.0 N·m (0.41 kgf-m, 2.95 lbf-ft)
1. Throttle grip	6. Left handlebar	 : Apply water resistant grease EP2.
2. Right handle switch	7. Handlebar bolt	
3. Left handle switch	8. Handlebar nut	
4. Left handlebar grip	9. Handlebar balancer	

GSX S 150 Model



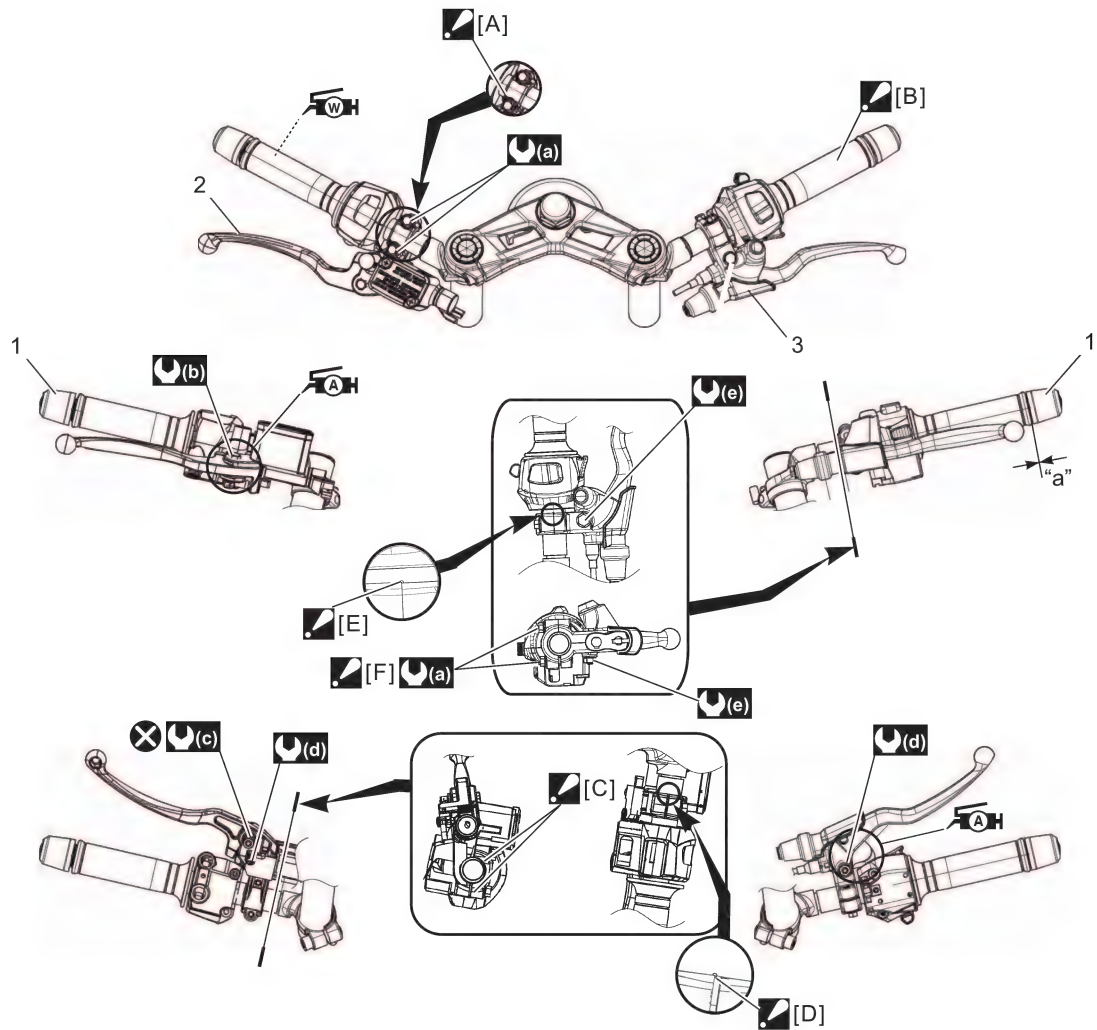
IH23K2620001-02

[A]: Apply handle grip glue.	3. Left handle switch	6. Handlebar balancer
1. Throttle grip	4. Left handlebar grip	: 4.0 N·m (0.41 kgf-m, 2.95 lbf-ft)
2. Right handle switch	5. Handlebar	: Apply water resistant grease EP2.

Handlebar Construction

GSX R 150 Model

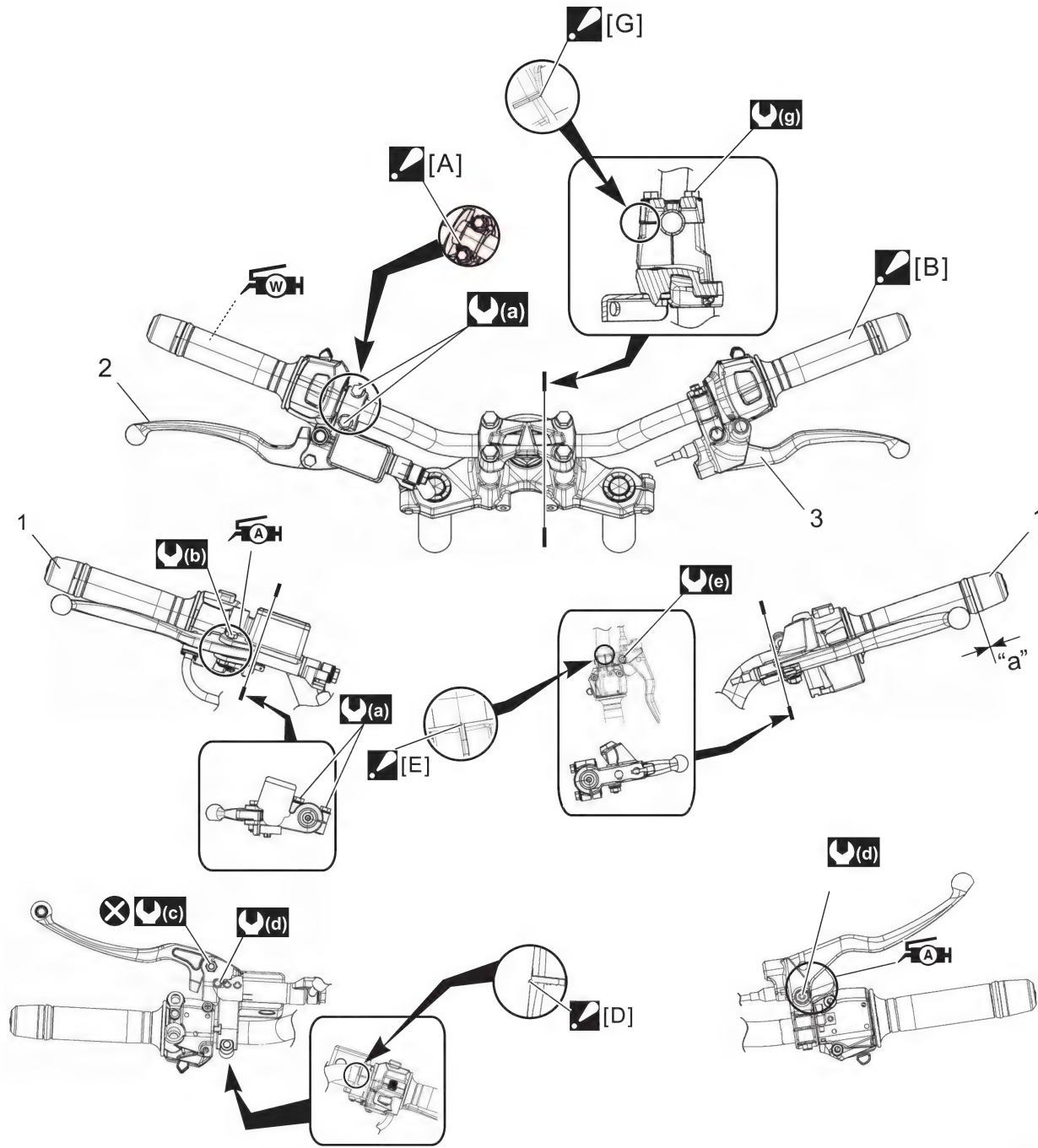
BENH23K26206002



IH23K1620038-01

[A]: Face the triangle mark forward.	1. Handlebar balancer	(c) : 6.0 N-m (0.61 kgf-m, 4.45 lbf-ft)
[B]: Apply handle grip glue.	2. Lever assy brake	(d) : 1.2 N-m (0.12 kgf-m, 0.90 lbf-ft)
[C]: Tighten the front bolt first.	3. Cover clutch lever	(f) : 6.5 N-m (0.66 kgf-m, 4.80 lbf-ft)
[D]: Align the punch mark of the right handlebar with the edge of front brake master cylinder holder.	"a": 2.0 – 3.0 mm (0.08 – 0.11 in)	[A]: Apply grease to sliding surface.
[E]: Align the mating surface of the clutch lever holder with the punch mark of left handlebar.	(a) : 10 N-m (1.0 kgf-m, 7.5 lbf-ft)	[W]: Apply water resistant grease EP2.
[F]: Tighten the upper bolt first.	(b) : 1.0 N-m (0.10 kgf-m, 0.75 lbf-ft)	: Do not reuse.

GSX S 150 Model



IH23K2620002-01

[A]: Face the triangle mark forward.	1. Handlebar balancer	(d) : 1.2 N·m (0.12 kgf-m, 0.90 lbf-ft)
[B]: Apply handle grip glue.	2. Lever assy brake	(f) : 6.5 N·m (0.66 kgf-m, 4.80 lbf-ft)
[C]: Tighten the front bolt first.	3. Clutch lever	(g) : 28 N·m (2.9 kgf-m, 21.0 lbf-ft)
[D]: Align the punch mark of the handlebar with the edge of front brake master cylinder holder.	"a": 2.0 – 3.0 mm (0.08 – 0.11 in)	[A]H : Apply grease to sliding surface.
[E]: Align the mating surface of the clutch lever holder with the punch mark of handlebar.	(a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)	[A]WH : Apply water resistant grease EP2.
[F]: Tighten the upper bolt first.	(b) : 1.0 N·m (0.10 kgf-m, 0.75 lbf-ft)	[X] : Do not reuse.
[G]: Align the punch mark the handlebar with upper face of lower handle holder.	(c) : 6.0 N·m (0.61 kgf-m, 4.45 lbf-ft)	

Handlebar Removal and Installation

BENH23K26206003

Removal

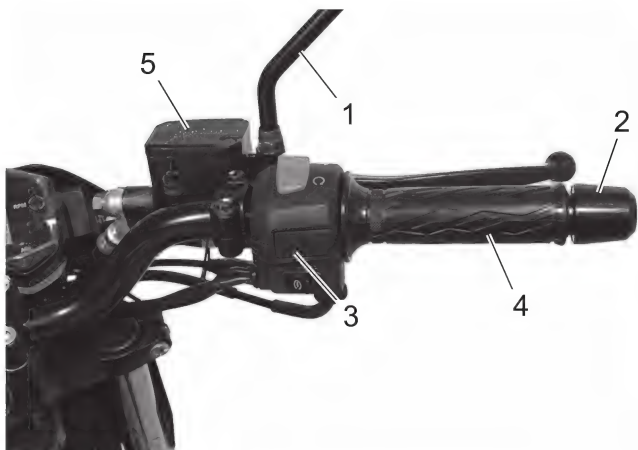
GSX R 150 Model

Right side

NOTICE

Do not turn the front brake master cylinder upside down.

- 1) Remove the following parts from the right side of the handlebar.
 - a) Handlebar balancer (2)
 - b) Right handle switch (3)
 - c) Throttle grip (4)
 - d) Front brake master cylinder assembly (5)



IH23K1620003-01

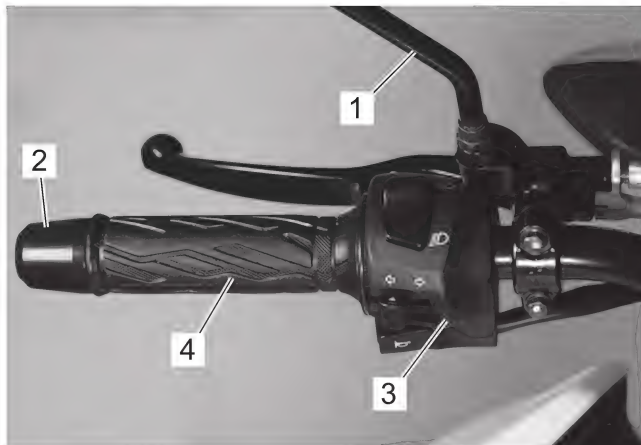
- 2) Remove the right handlebar (1).



IH23K1620004-01

Left side

- 1) Remove the following parts from the left side of the handlebar.
 - a) Handlebar balancer (2)
 - b) Left handle switch (3)
 - c) Left handlebar grip (4)



IH23K1620005-01

- 2) Disconnect the clutch cable from the clutch lever.
☞ (Page 5C-3)

- 3) Remove the clutch lever assembly (1).



IH23K1620006-01

- 4) Remove the left handlebar (1).



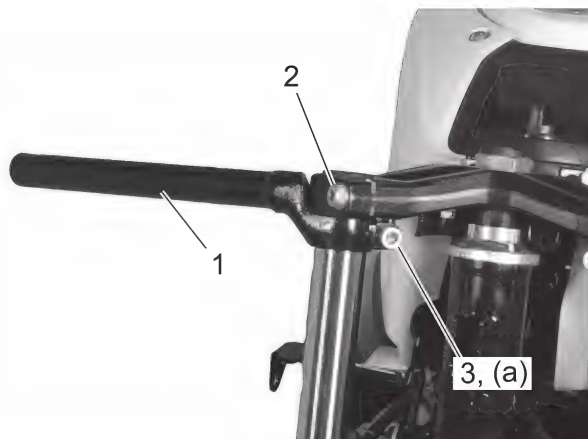
IH23K1620007-01

Installation**Right side**

- 1) Install the right handlebar (1) and install the handlebar bolt (2) and a new handlebar nut (3).
- 2) Tighten the right handlebar nut to specified torque.

Tightening torque

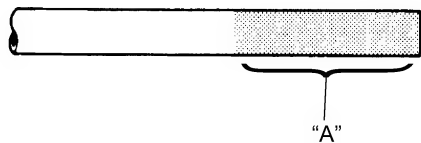
Right handlebar nut (a): 28 N·m (2.9 kgf-m, 21.0 lbf-ft)



IH23K1620008-01

- 3) Install the front brake master cylinder assembly.
(Page 4A-15)
- 4) Apply grease onto the handlebars before installing the throttle grip.

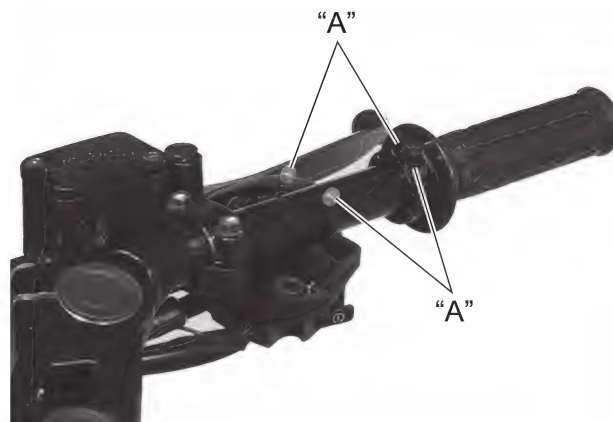
“A”: Grease 99000-25350 (SUZUKI WATER RESISTANT GREASE EP2)



IE31J1620008-01

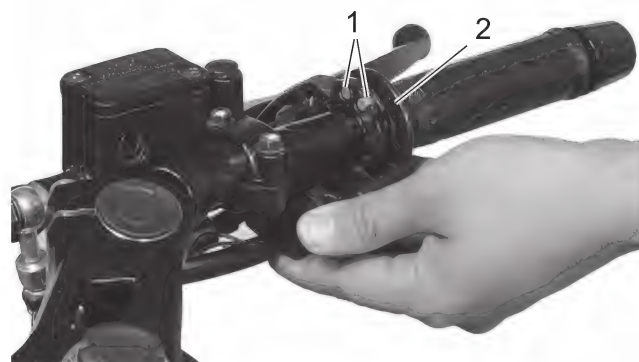
- 5) Apply grease to the end of the throttle cables and cable pulley.

“A”: Grease 99000-25011 (SUZUKI SUPER GREASE A)



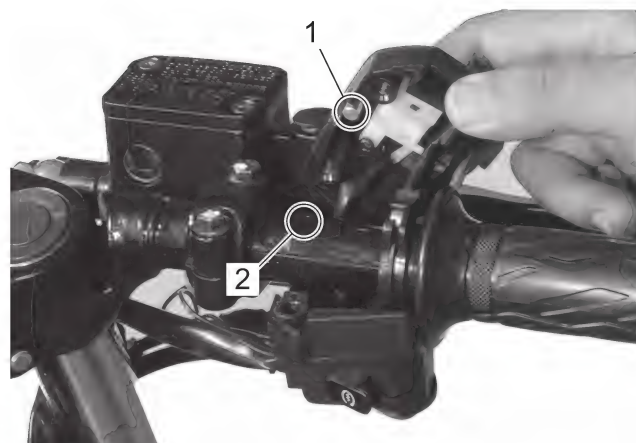
IH23K1620009-01

- 6) Install the throttle cable (1) to the throttle grip (2).



IH23K1620010-01

- 7) Insert the projection (1) of the right handle switch into the hole (2) of the handlebar, and then tighten the right handle switch screws.



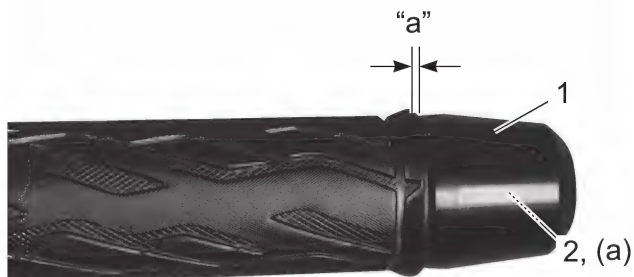
IH23K1620011-01

6B-7 Steering / Handlebar:

- 8) Install the right handlebar balancer (1) and adjust clearance between the throttle grip and handlebar balancer as follows.
- 9) Tighten the handlebar balancer screw (2).

Tightening torque

Handlebar balancer screw (a): 5.5 N·m (0.56 kgf-m, 4.05 lbf-ft)



IH23K1620012-01

"a": 2.0 – 3.0 mm (0.08 – 0.11 in)

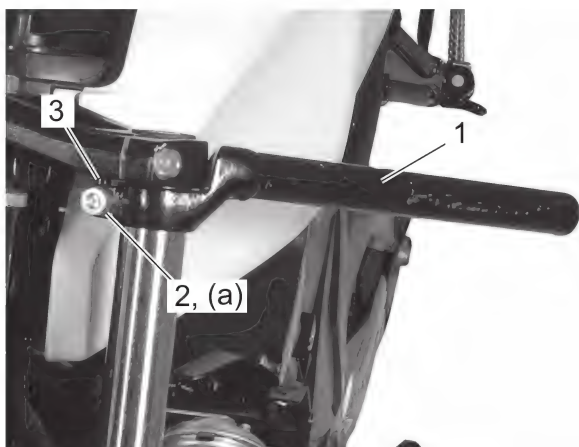
- 10) Install the right rear view mirror.

Left side

- 1) Install the left handlebar (1) and install the handlebar bolt (2), clutch cable guide (3) and a new handlebar nut (4).
- 2) Tighten the left handlebar nut to specified torque.

Tightening torque

Left handlebar nut (a): 28 N·m (2.9 kgf-m, 21.0 lbf-ft)



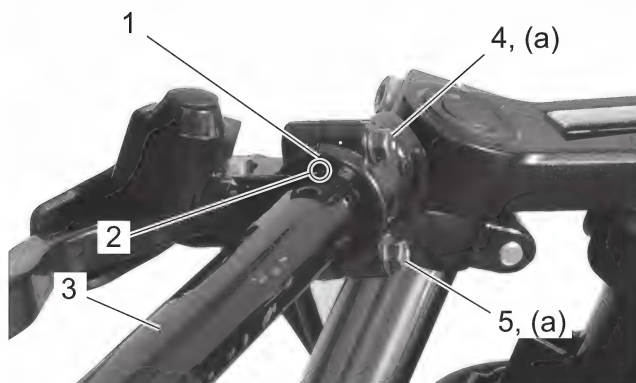
IH23K1620013-01

- 3) Install the clutch lever assembly as follows.

- a) Align the edge (1) of clutch lever with the punch mark (2) on the handlebar (3).
- b) Tighten the upper bolt (4) and then tighten the lower bolt (5).

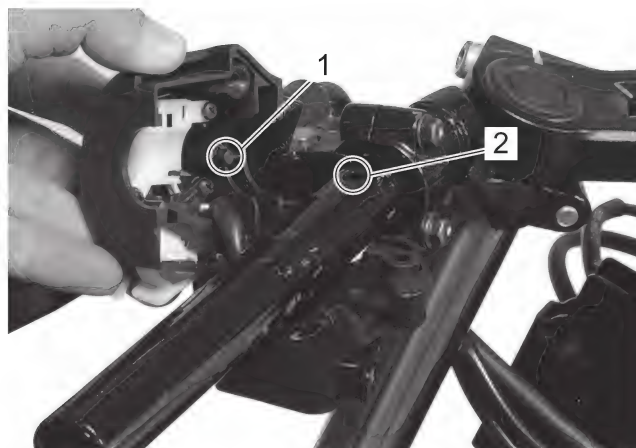
Tightening torque

Clutch lever holder bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IH23K1620014-01

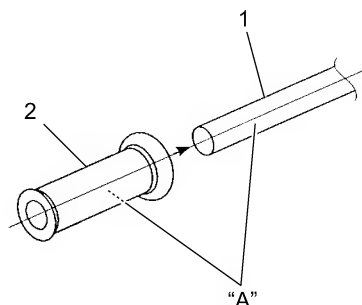
- 4) Install the clutch cable to the clutch lever. (Page 5C-3)
- 5) Insert the projection (1) of the left handle switch into the hole (2) of the handlebar, and then tighten the left handle switch screws.



IH23K1620015-01

- 6) Apply handle grip glue to both the left handlebar (1) outer surface on which the grip is being fitted and internal surface of the left handlebar grip (2) evenly.

"A": Adhesive (Handle grip glue)

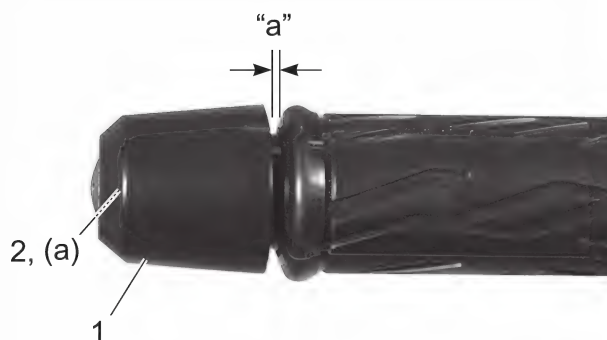


IE31J1620012-01

- 7) Install the left handlebar balancer (1) and adjust clearance between the left grip and handlebar balancer as follows.
- 8) Tighten the handlebar balancer screw (2).

Tightening torque

Handlebar balancer screw (a): 5.5 N·m (0.56 kgf-m, 4.05 lbf-ft)



IH23K1620016-01

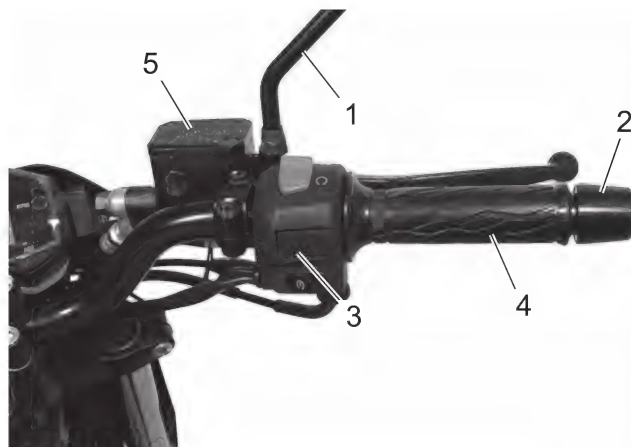
"a": 2.0 – 3.0 mm (0.08 – 0.11 in)

- 9) Install the left rear view mirror.

Removal

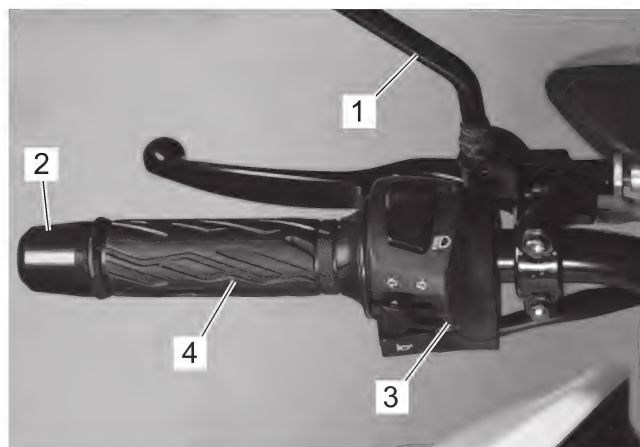
GSX S 150 Model

- 1) Remove the following parts from the right side of the handlebar.
- Rear view mirror (1)
 - Handlebar balancer (2)
 - Right handle switch (3)
 - Throttle grip (4)
 - Front brake master cylinder assembly (5)



IH23K2620031-01

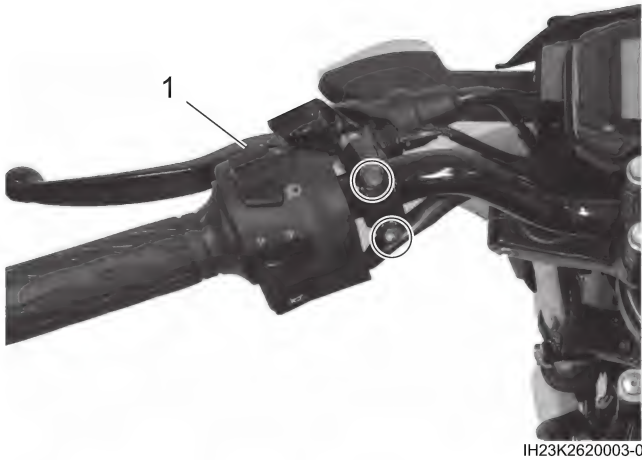
- 2) Remove the following parts from the left side of the handlebar.
- Rear view mirror (1)
 - Handlebar balancer (2)
 - Left handle switch (3)
 - Left handlebar grip (4)



IH23K2620032-01

6B-9 Steering / Handlebar:

- 3) Disconnect the clutch cable from the clutch lever.
☞ (Page 5C-3)
- 4) Remove the clutch lever assembly (1).



IH23K2620003-01

- 5) Remove handlebar bolt and then remove handlebar (1).



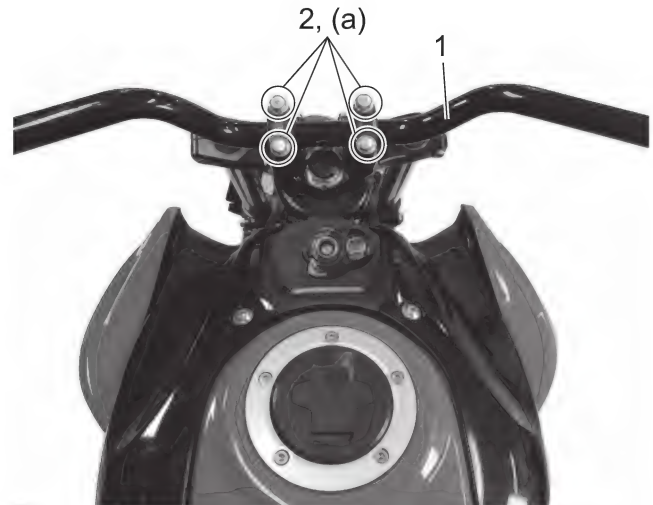
IH23K2620004-01

Installation

- 1) Install the handlebar (1) and install the handlebar bolt (2).
- 2) Tighten the handlebar bolt to specified torque.

Tightening torque

Handlebar bolt (a): 28 N·m (2.9 kgf-m, 21.0 lbf-ft)

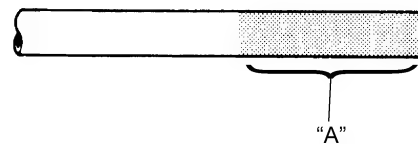


IH23K2620006-01

Right side

- 1) Install the front brake master cylinder assembly.
☞ (Page 4A-15)
- 2) Apply grease onto the handlebars before installing the throttle grip.

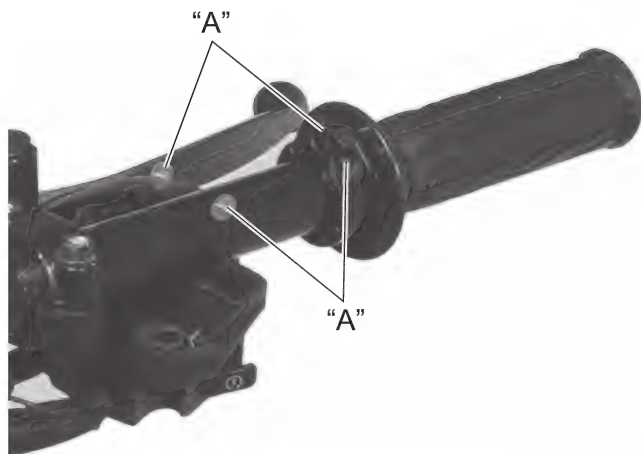
"A": Grease 99000-25350 (SUZUKI WATER RESISTANT GREASE EP2)



IE31J1620008-01

- 3) Apply grease to the end of the throttle cables and cable pulley.

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)



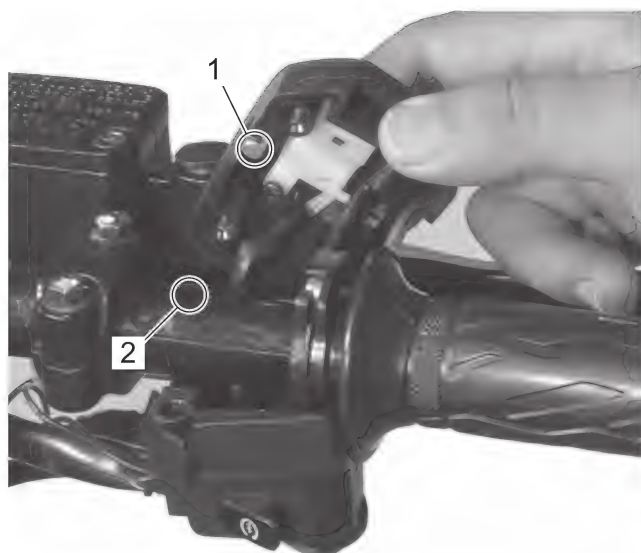
IH23K2620018-01

- 4) Install the throttle cable (1) to the throttle grip (2).



IH23K2620019-01

- 5) Insert the projection (1) of the right handle switch into the hole (2) of the handlebar, and then tighten the right handle switch screws.



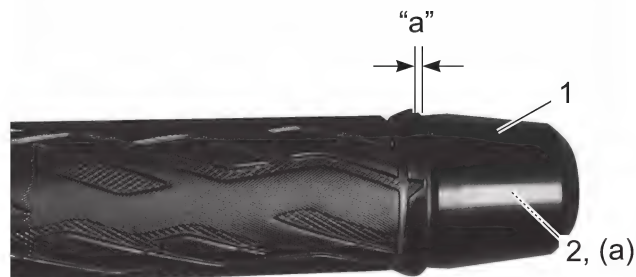
IH23K2620020-01

- 6) Install the right handlebar balancer (1) and adjust clearance between the throttle grip and handlebar balancer as follows.

- 7) Tighten the handlebar balancer screw (2).

Tightening torque

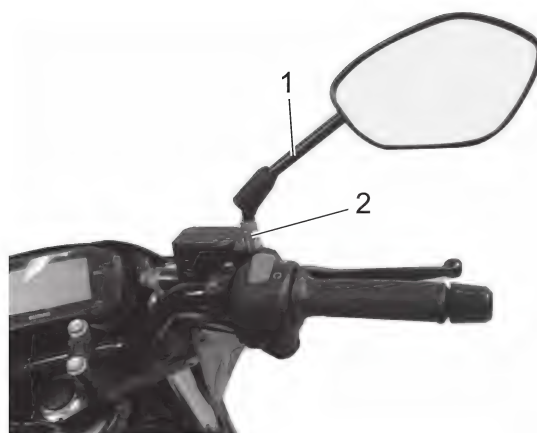
Handlebar balancer screw (a): 5.5 N·m (0.56 kgf-m, 4.05 lbf-ft)



IH23K1620012-01

"a": 2.0 – 3.0 mm (0.08 – 0.11 in)

- 8) Install the rear view mirror (1) and tightening the rear view mirror bolt (2).



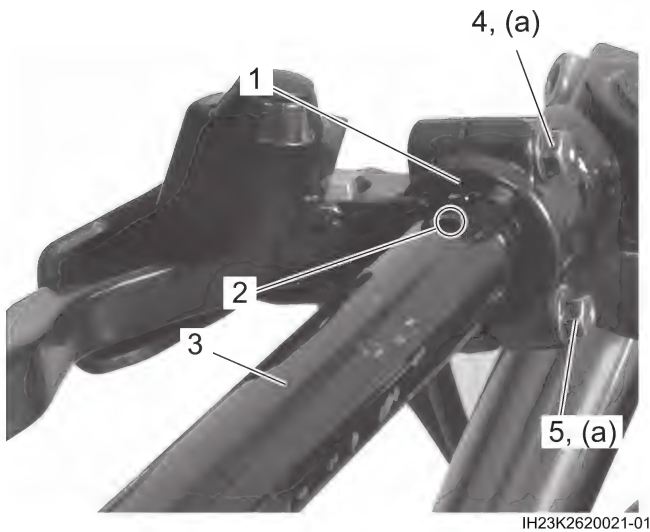
IH23K2620005-02

Left side

- 1) Install the clutch lever assembly as follows.
 - a) Align the edge (1) of clutch lever with the punch mark (2) on the handlebar (3).
 - b) Tighten the upper bolt (4) and then tighten the lower bolt (5).

Tightening torque

Clutch lever holder bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

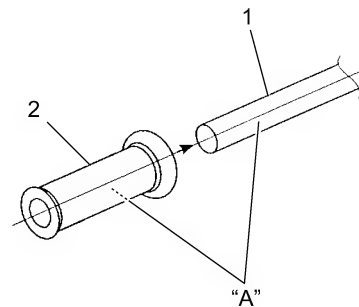


- 2) Install the clutch cable to the clutch lever. (Page 5C-3)
- 3) Insert the projection (1) of the left handle switch into the hole (2) of the handlebar, and then tighten the left handle switch screws.



- 4) Apply handle grip glue to both the left handlebar (1) outer surface on which the grip is being fitted and internal surface of the left handlebar grip (2) evenly.

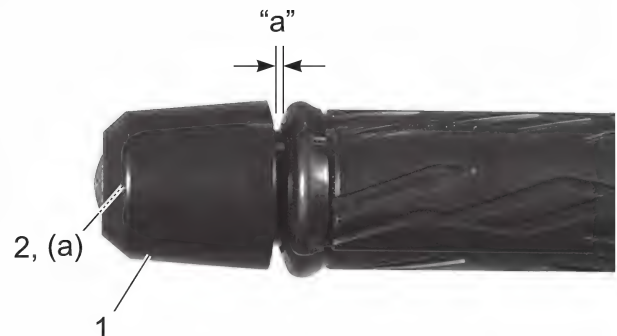
"A": Adhesive (Handle grip glue)



- 5) Install the left handlebar balancer (1) and adjust clearance between the left grip and handlebar balancer as follows.
- 6) Tighten the handlebar balancer screw (2).

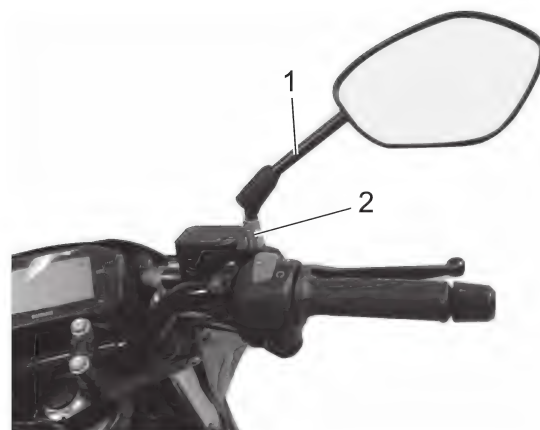
Tightening torque

Handlebar balancer screw (a): 5.5 N·m (0.56 kgf-m, 4.05 lbf-ft)



"a": 2.0 – 3.0 mm (0.08 – 0.11 in)

- 7) Install the rear view mirror (1) and tightening the rear view mirror bolt (2).



Handlebar Inspection

BENH23K26206004

GSX R 150 Model

Refer to "Handlebar Removal and Installation" (Page 6B-5).

Inspect the handlebars for distortion and damage.

If any defect is found, replace the handlebar with a new one.



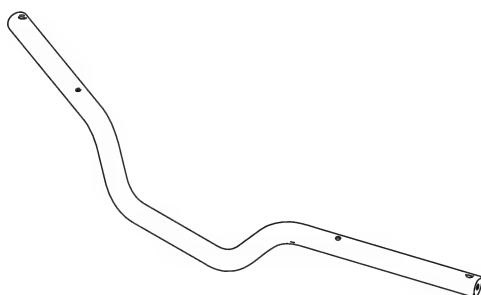
IH23K1620018-01

GSX S 150 Model

Refer to "Handlebar Removal and Installation" (Page 6B-5).

Inspect the handlebars for distortion and damage.

If any defect is found, replace the handlebar with a new one.

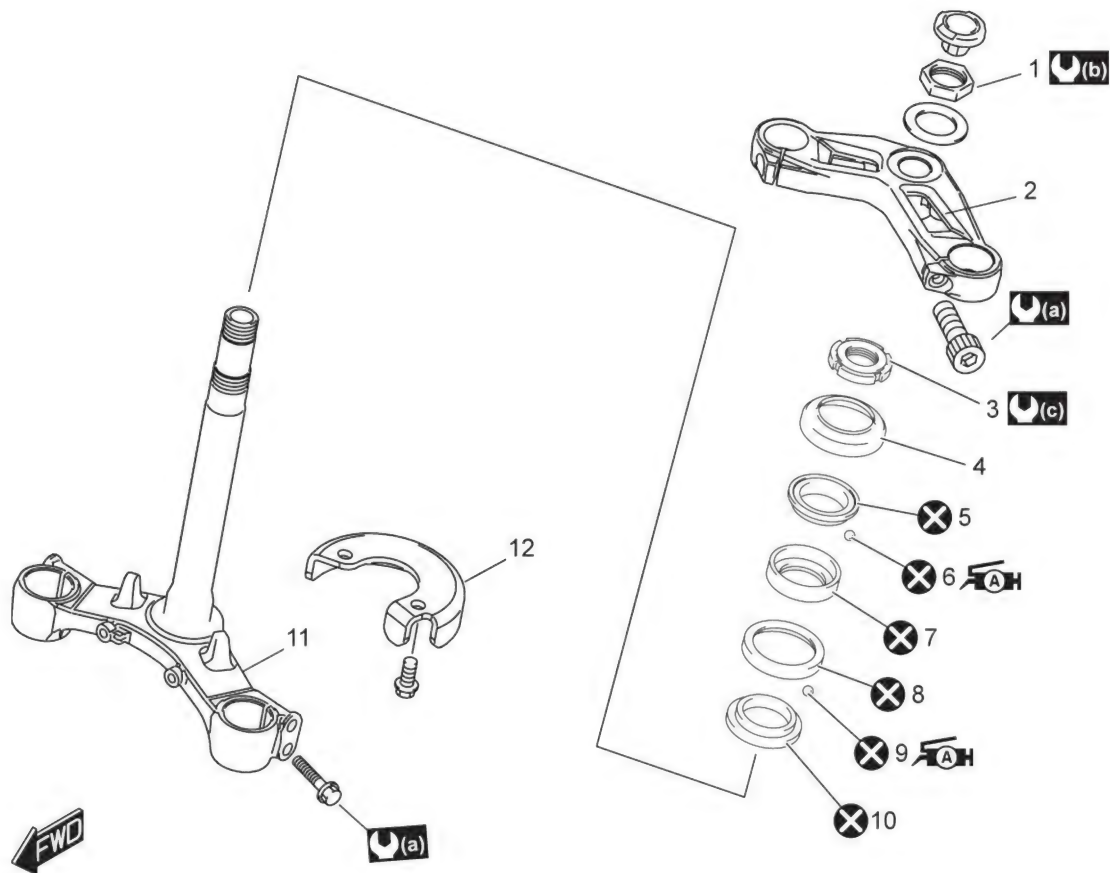


IH23K2620007-01

Steering Stem Components

GSX R 150 Model

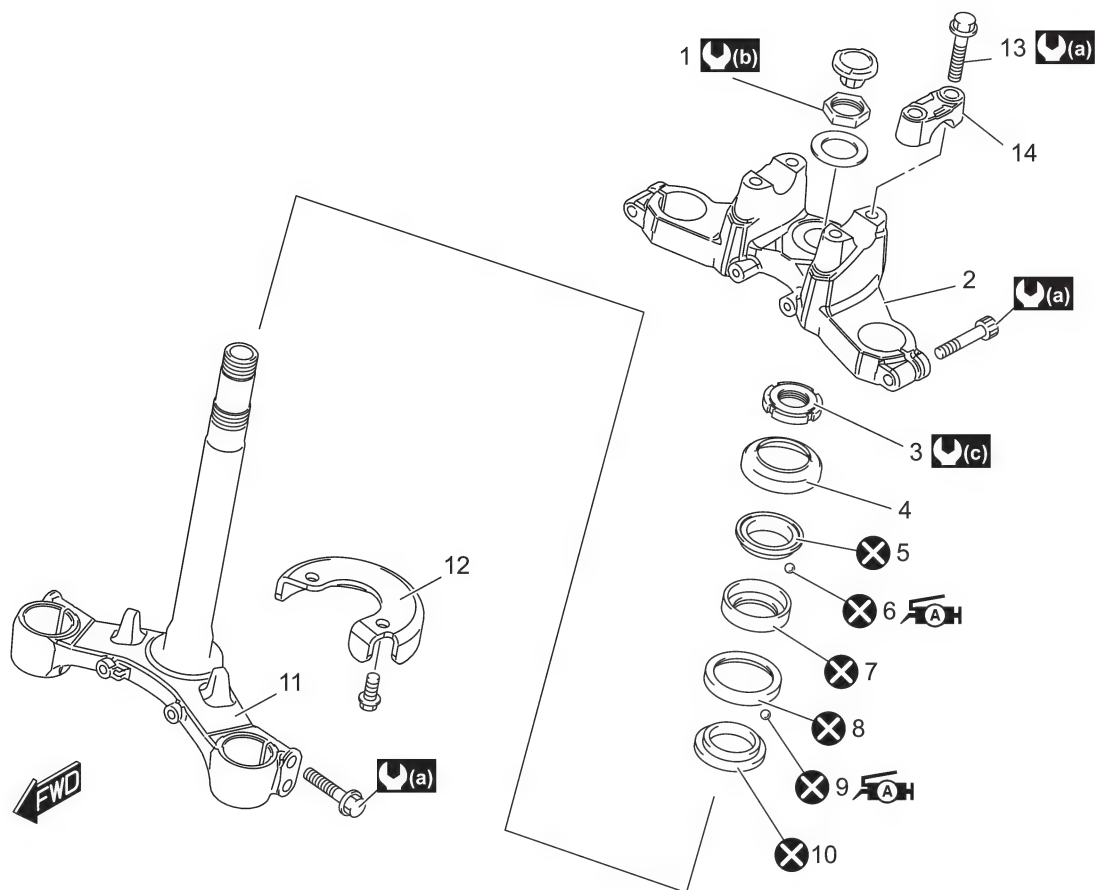
BENH23K26206005



IH23K1620019-02

1. Steering stem head nut	7. Steering stem upper steel ball inner race	: 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
2. Steering stem upper bracket	8. Steering stem lower steel ball inner race	: 30 N·m (3.1 kgf-m, 22.5 lbf-ft)
3. Steering stem nut	9. Steering stem lower steel ball	: 20 N·m (2.0 kgf-m, 15.0 lbf-ft) → turn counterclockwise 1/4 → 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft)
4. Dust cover	10. Steering stem lower steel ball outer race	: Apply grease.
5. Steering stem upper steel ball outer race	11. Steering stem lower bracket	: Do not reuse.
6. Steering stem upper steel ball	12. Steering lock plate	

GSX S 150 Model



IH23K2620023-01

1. Steering stem head nut	8. Steering stem lower steel ball inner race	(a) : 23 N-m (2.3 kgf-m, 17.0 lbf-ft)
2. Steering stem upper bracket	9. Steering stem lower steel ball	(b) : 30 N-m (3.1 kgf-m, 22.5 lbf-ft)
3. Steering stem nut	10. Steering stem lower steel ball outer race	(c) : 20 N-m (2.0 kgf-m, 15.0 lbf-ft) → turn counterclockwise 1/4 → 5.0 N-m (0.51 kgf-m, 3.70 lbf-ft)
4. Dust cover	11. Steering stem lower bracket	: Apply grease.
5. Steering stem upper steel ball outer race	12. Steering lock plate	: Do not reuse.
6. Steering stem upper steel ball	13. Handle holder bolt	
7. Steering stem upper steel ball inner race	14. Handle upper holder	

Steering On-Vehicle Inspection

BENH23K26206006

GSX R 150 Model

Steering should be adjusted properly for smooth turning of handlebars and safe running. Overtightened steering prevents smooth turning of the handlebars and loose steering will cause poor stability.

- 1) Check that there is no play in the front fork.
 - a) Support the motorcycle with its front wheel off the ground, grasp the bottoms of the front forks and move the forks back-and-forth to check there is no play in the stem bearings.



IH23K1620020-01

- b) With the front wheel on the ground and applying the front brake(s), move the handlebar back-and-forth and up-and-down to check there is no play in the stem bearings.



IH23K1620021-01

- 2) If play is found, readjust the steering. (Page 6B-16)

Steering On-Vehicle Inspection

BENH23K26206013

GSX S 150 Model

Steering should be adjusted properly for smooth turning of handlebars and safe running. Overtightened steering prevents smooth turning of the handlebars and loose steering will cause poor stability.

- 1) Check that there is no play in the front fork.
 - a) Support the motorcycle with its front wheel off the ground, grasp the bottoms of the front forks and move the forks back-and-forth to check there is no play in the stem bearings.



IH23K2620008-01

- b) With the front wheel on the ground and applying the front brake(s), move the handlebar back-and-forth and up-and-down to check there is no play in the stem bearings.



IH23K2620009-01

- 2) If play is found, readjust the steering. (Page 6B-16)

Steering Tension Adjustment

BENH23K26206007

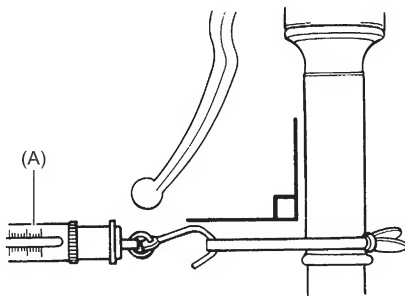
- 1) By supporting the motorcycle with a jack, lift the front wheel until it is off the ground 20 – 30 mm (0.8 – 1.2 in).
- 2) Check to make sure that the cables and wire harnesses are properly routed.
- 3) With the front wheel in the straight ahead state, hitch the spring scale (special tool) on one handlebar grip end as shown in the figure and read the graduation when the handlebars start moving.

Special tool

(A): 09940-92720

Steering tension initial force

[Standard]: 2 – 5 N (0.20 – 0.51 kgf, 0.45 – 1.12 lbf)



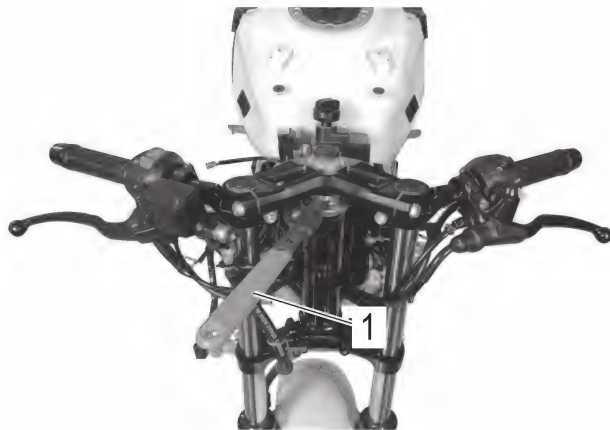
ID26J1620028-01

- 4) Do the same on the other grip end.
- 5) If the initial force reading on the scale when the handlebar starts turning is either too heavy or too light, adjust the tension until it satisfies the specification as follows.
 - a) First, loosen the front fork upper clamp bolts and steering stem head nut, and then adjust the steering stem nut by loosening or tightening it.

Special tool

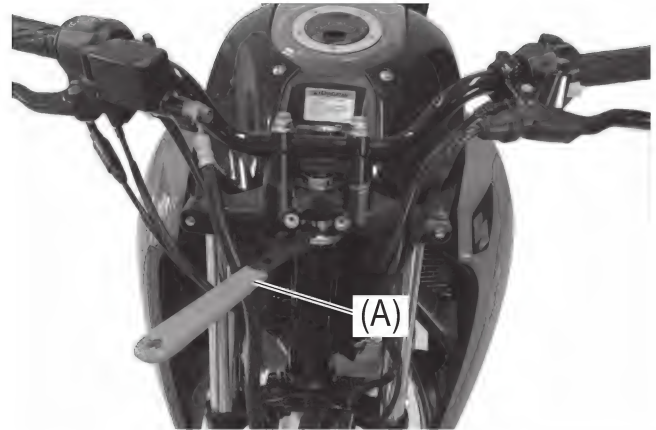
(A): 09910-60620

GSX R 150 Model



IH23K1620039-01

GSX S 150 Model



IH23K2620010-01

- b) Tighten the steering stem head nut, front fork upper clamp bolts to the specified torque, and recheck the initial force with the spring scale according to the previously described procedure.

Tightening torque

Steering stem head nut: 30 N·m (3.1 kgf-m, 22.5 lbf-ft)

Front fork upper clamp bolt: 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

- c) If the initial force is found within the specified range, then hold the front fork outer tube legs, move them back-and-forth and make sure that the steering is not loose.



IH23K1620022-01

Steering Stem Upper Bracket Removal and Installation

BENH23K26206008

Removal

GSX R 150 Model

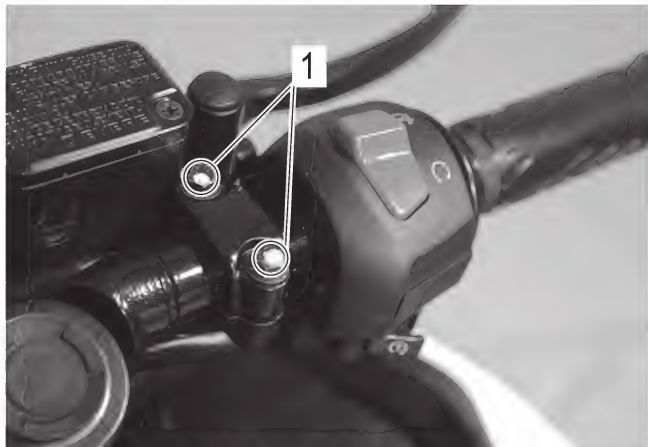
NOTE

Do not turn the front brake master cylinder upside down.

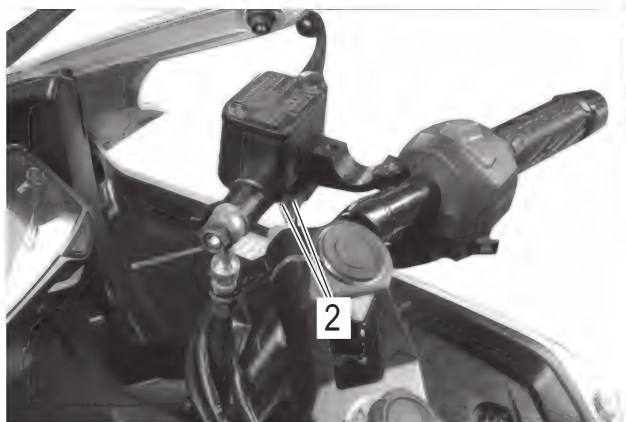
- 1) Support the motorcycle with stand.
- 2) Remove the headlight assembly. (Page 9B-2)

6B-17 Steering / Handlebar:

- 3) Disconnect the clutch cable from the clutch lever.
☞ (Page 5C-3)
- 4) Remove the front brake master cylinder assembly (1) and disconnect the front brake light switch couplers (2).

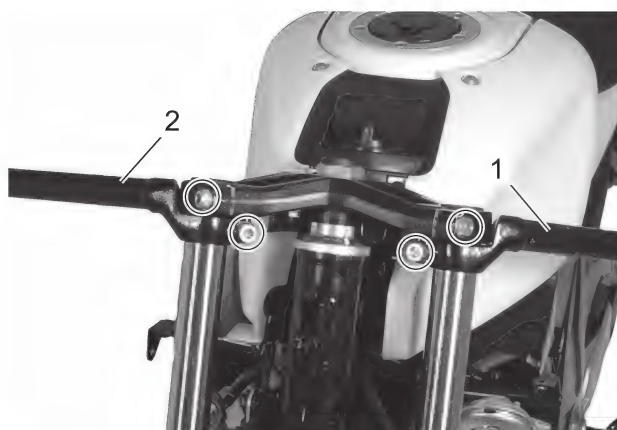


IH23K1620023-01



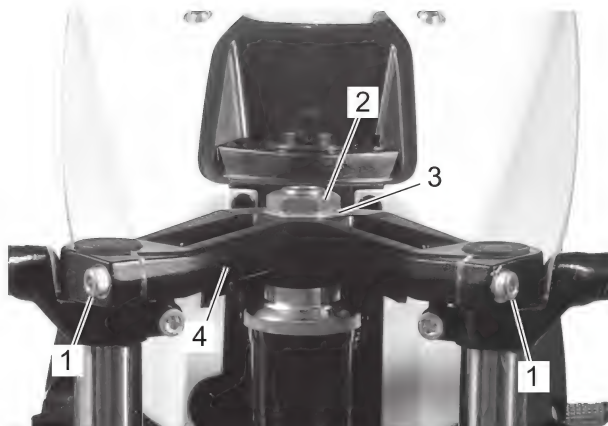
IH23K1620041-02

- 5) Disconnect the following lead wire couplers.
 - Left handle switch
 - Clutch lever position switch
 - Ignition switch
 - Right handle switch
- 6) Remove the left handlebar (1) and right handlebar (2).



IH23K1620024-02

- 7) Loosen the front fork lower clamp bolts (1), and then remove the steering stem head nut (2), washer (3) and steering stem upper bracket assembly (4).



IH23K1620025-01

GSX S 150 Model

NOTE

Do not turn the front brake master cylinder upside down.

- 1) Support the motorcycle with center stand.
- 2) Remove the headlight assembly. ☞ (Page 9B-2)
- 3) Disconnect the clutch cable from the clutch lever.
☞ (Page 5C-3)
- 4) Remove the front brake master cylinder assembly (1) and disconnect the front brake light switch couplers (2).



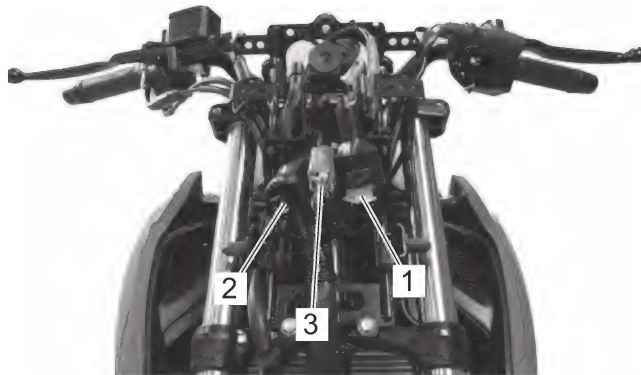
IH23K2620011-01



IH23K2620012-01

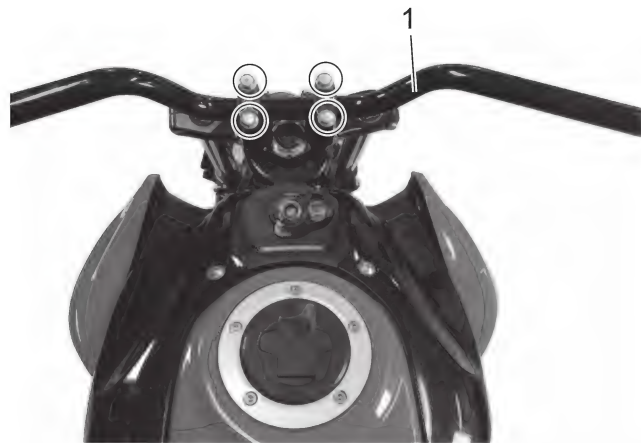
5) Disconnect the following lead wire couplers.

- Left handle switch (1)
- Clutch lever position switch (2)
- Right handle switch (3)



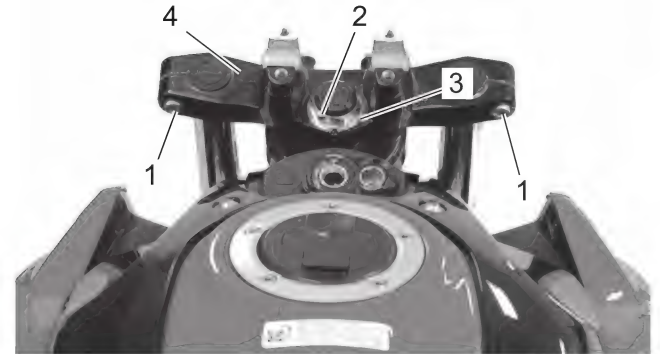
IH23K2620013-01

6) Remove the handlebar (1).



IH23K2620014-02

7) Loosen the front fork lower clamp bolts (1), and then remove the steering stem head nut (2), washer (3) and steering stem upper bracket assembly (4).



IH23K2620015-01

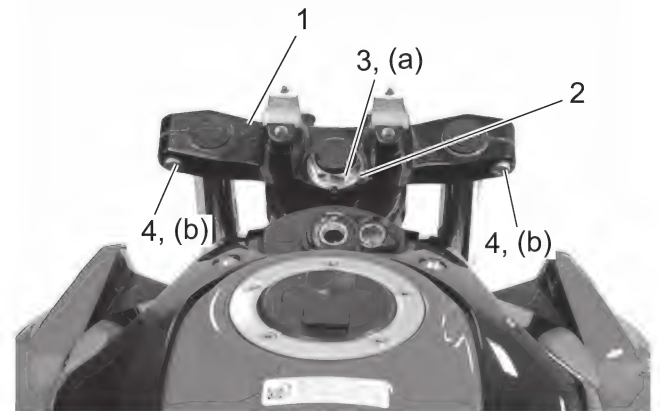
Installation

- 1) Install the steering stem upper bracket assembly (1), washer (2) and steering stem head nut (3).
- 2) Tighten the steering stem head nut and front fork upper clamp bolts (4) to the specified torque.

Tightening torque

Steering stem head nut (a): 30 N·m (3.1 kgf-m, 22.5 lbf-ft)

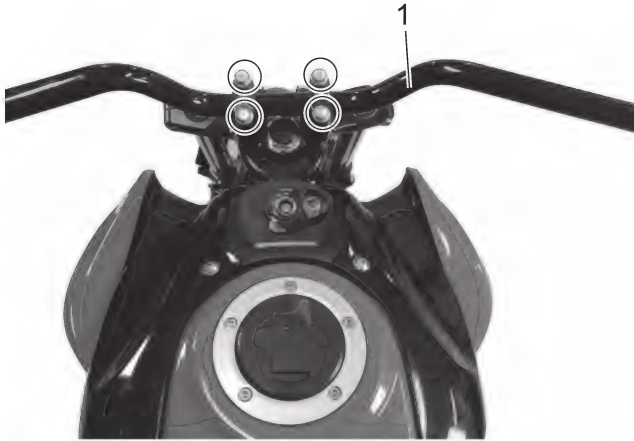
Front fork upper clamp bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IH23K2620016-01

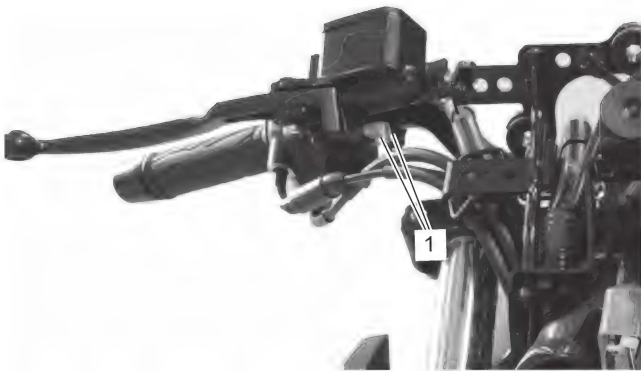
6B-19 Steering / Handlebar:

- 3) Install the handlebar (1), and tighten handlebar nuts to specified torque. Refer to "Handlebar Removal and Installation" (Page 6B-5).



IH23K2620014-02

- 4) Connect front brake light switch couplers (1) and install the front brake master cylinder assembly. Refer to "Front Brake Master Cylinder Assembly Removal and Installation" in Section 4A (Page 4A-15).



IH23K2620017-01

- 5) Install the headlight assembly. ⚙ (Page 9B-2)
- 6) Adjust the clutch cable play. ⚙ (Page 5C-3)

Steering Stem Upper Bracket Inspection

BENH23K26206009

GSX R 150 Model

Refer to "Steering Stem Upper Bracket Removal and Installation" (Page 6B-16).

Inspect the steering stem upper bracket for damage.

If any damage is found, replace the steering stem upper bracket with a new one.



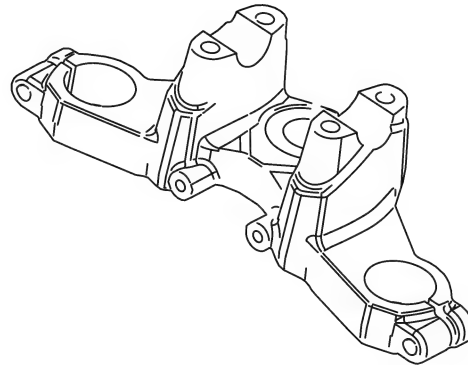
IH23K1620043-01

GSX S 150 Model

Refer to "Steering Stem Upper Bracket Removal and Installation" (Page 6B-16).

Inspect the steering stem upper bracket for damage.

If any damage is found, replace the steering stem upper bracket with a new one.



IH23K2620024-01

Steering Stem Removal and Installation

BENH23K26206010

GSX R 150 Model**Removal**

- 1) Remove the front forks. (Page 2B-2)
- 2) Remove the right and left handlebars. (Page 6B-16)
- 3) Remove the steering stem head nut (1) and washer (2), and then remove the steering stem upper bracket assembly (3).

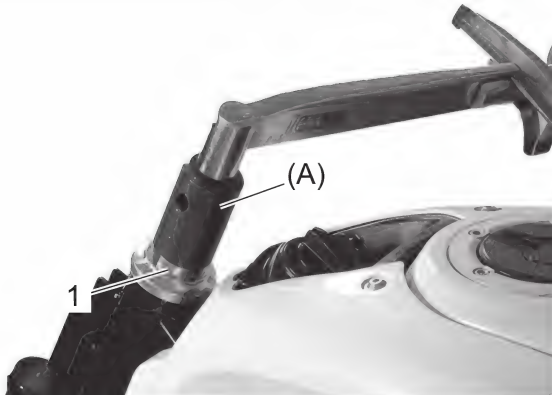


IH23K1620030-02

- 4) While holding the steering stem lower bracket, remove the steering stem nut (1) using the special tool.

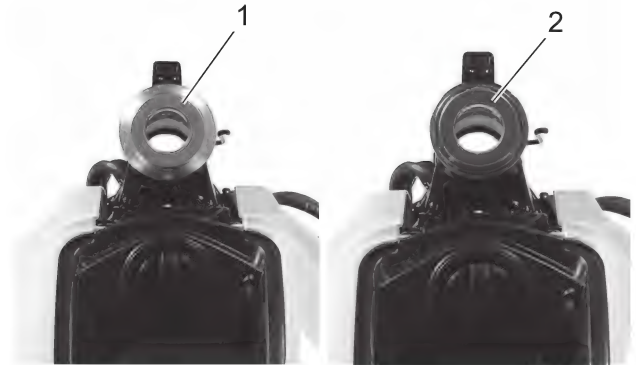
Special tool**(A): 09940-14920**

- 5) Remove the steering stem lower bracket.



IH23K1620031-01

- 6) Remove the dust cover (1) and steering stem upper steel ball outer race (2).

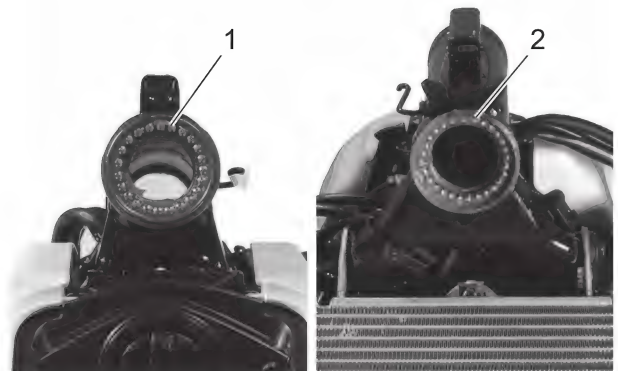


IH23K1620032-02

- 7) Remove the steering stem upper (1) and lower (2) steel balls.

Number of steel ball

Upper	23 pieces
Lower	28 pieces

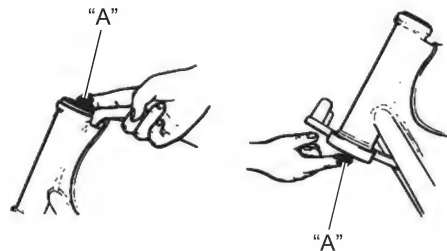


IH23K1620033-02

Installation

- 1) Apply grease to the steering stem upper and lower inner races.

“A”: Grease 99000–25011 (SUZUKI SUPER GREASE A)

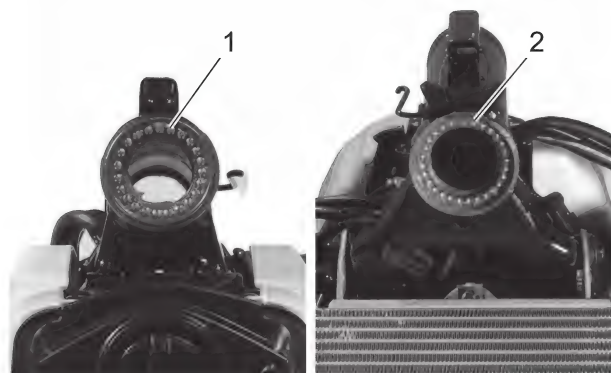


IE29J1620043-01

- 2) Install new steering stem upper (1) and lower (2) steel balls.

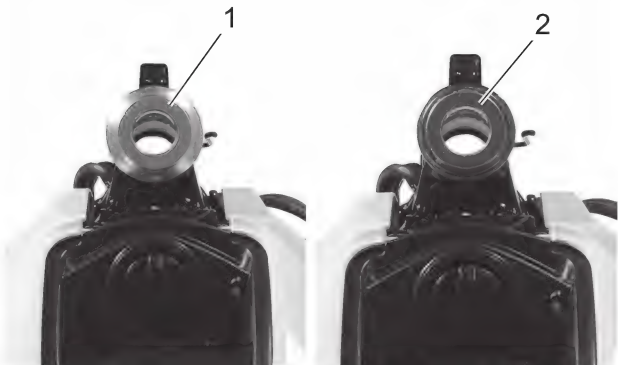
Number of steel ball

Upper	23 pieces
Lower	28 pieces



IH23K1620033-02

- 3) Install a new steering stem upper steel ball outer race (1) and a new dust cover (2).



IH23K1620032-02

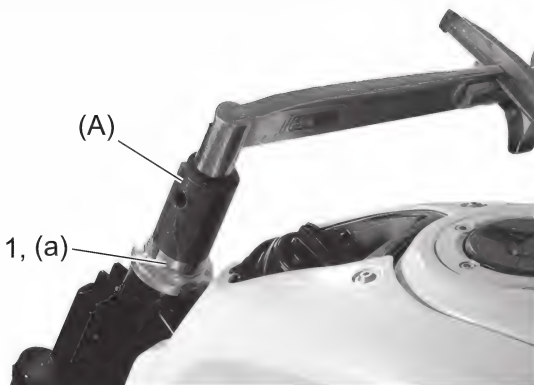
- 4) Set the steering stem lower bracket to the frame.
5) Install the steering stem nut (1) as shown below.
a) Tighten the steering stem nut to 20 N·m (2.0 kgf-m, 15.0 lbf-ft) with the special tools.
b) Loosen the steering stem nut 1/4 turn “a”.
c) Tighten the steering stem nut to 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft) with the special tools.

Special tool

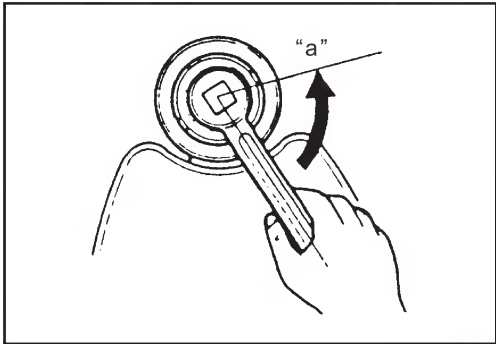
(A): 09940–14920

Tightening torque

Steering stem nut (a): 20 N·m (2.0 kgf-m, 15.0 lbf-ft) → turn counterclockwise 1/4 → 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft)



IH23K1620034-01



IF40J2620007-01

- 6) Turn the steering stem (1) quickly to the left and right more than three times to seat the stem properly.



IH23K1620035-01

- 7) In this condition, check that the steering stem can turn smoothly without rattle and stiffness. If there is a rattle or heavy movement, readjust the tightness by the stem nut.

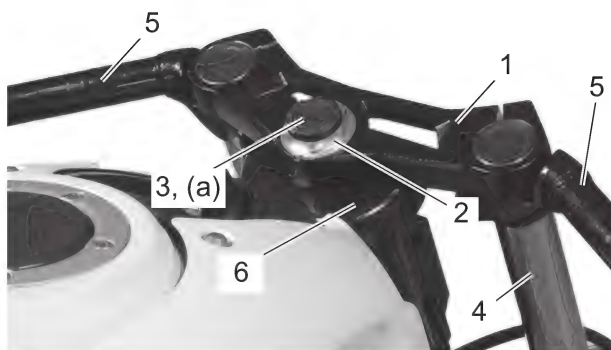
NOTE

This adjustment may vary depending on the motorcycle individually.

- 8) Install the front forks (4), handle bar (5), steering lock plate (6), steering stem upper bracket (1), washer (2) and steering stem head nut (3) temporarily.
- 9) Tighten the steering stem head nut to the specified torque.

Tightening torque

Steering stem head nut (a): 30 N·m (3.1 kgf-m, 22.5 lbf-ft)



IH23K1620044-01

- 10) Install the handlebars. (Page 6B-16)
- 11) Install the front forks in proper position. (Page 2B-2)

- 12) Pass the cables correctly and install the headlight housing brace. Refer to "Throttle Cable Routing Diagram" in Section 1D (Page 1D-1).
- 13) Check the steering tension. (Page 6B-16)

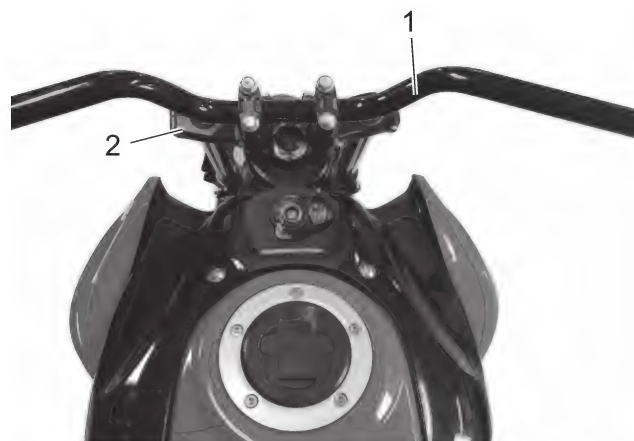
Steering Stem Removal and Installation

BENH23K26206014

GSX S 150 Model

Removal

- 1) Remove the front forks. (Page 2B-2)
- 2) Remove handlebar (1) and steering stem upper bracket (2). (Page 6B-16)



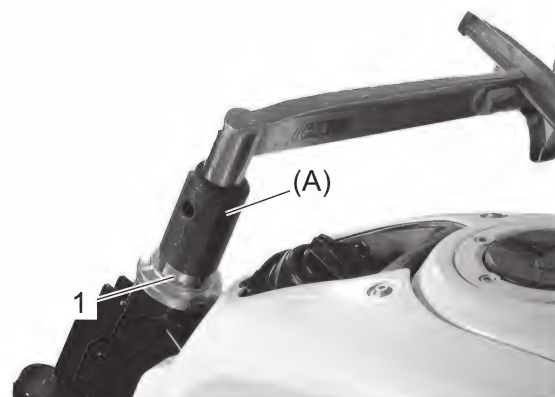
IH23K2620025-01

- 3) While holding the steering stem lower bracket, remove the steering stem nut (1) using the special tool.

Special tool

(A): 09940-14920

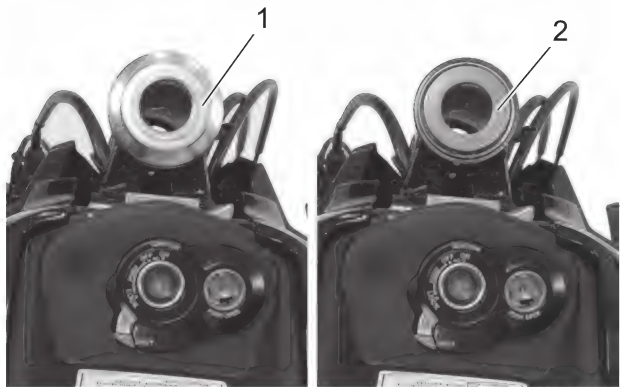
- 4) Remove the steering stem lower bracket.



IH23K1620031-01

6B-23 Steering / Handlebar:

- 5) Remove the dust cover (1) and steering stem upper steel ball outer race (2).

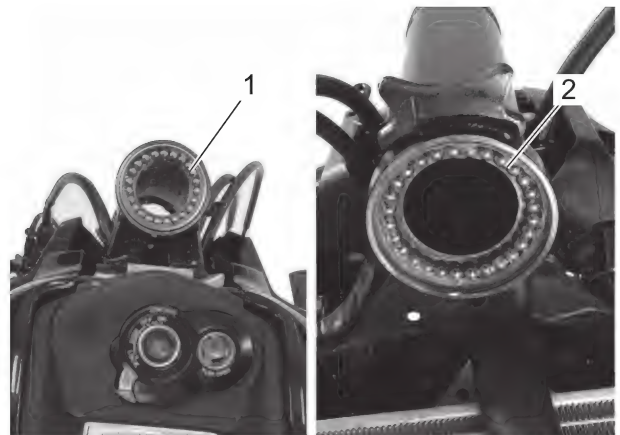


IH23K2620026-02

- 6) Remove the steering stem upper (1) and lower (2) steel balls.

Number of steel ball

Upper	23 pieces
Lower	28 pieces

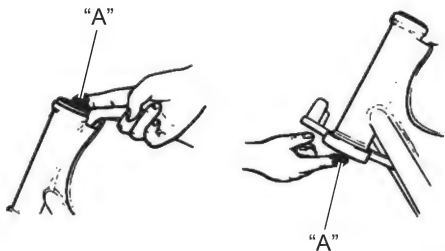


IH23K2620027-02

Installation

- 1) Apply grease to the steering stem upper and lower inner races.

“A”: Grease 99000–25011 (SUZUKI SUPER GREASE A)

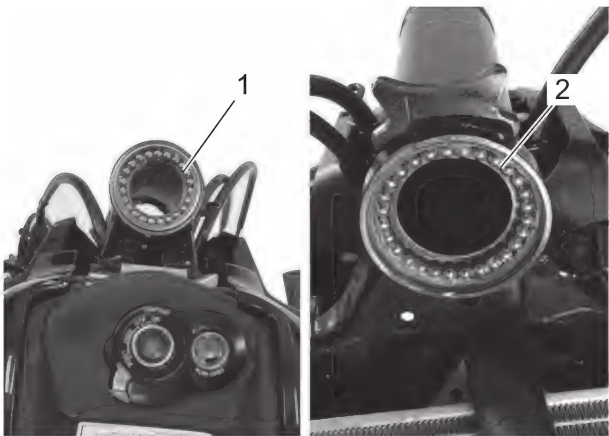


IE29J1620043-01

- 2) Install new steering stem upper (1) and lower (2) steel balls.

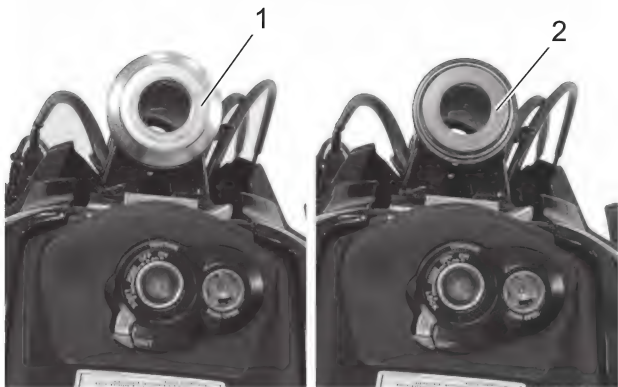
Number of steel ball

Upper	23 pieces
Lower	28 pieces



IH23K2620027-02

- 3) Install a new steering stem upper steel ball outer race (1) and a new dust cover (2).

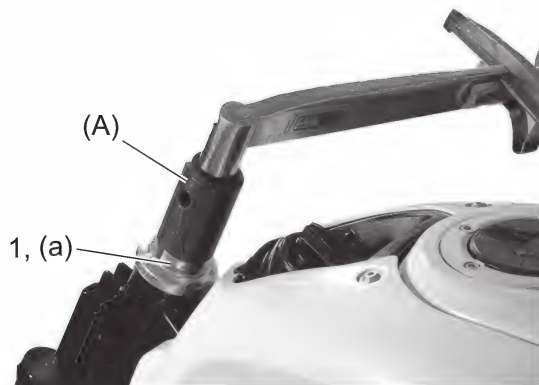


IH23K2620026-02

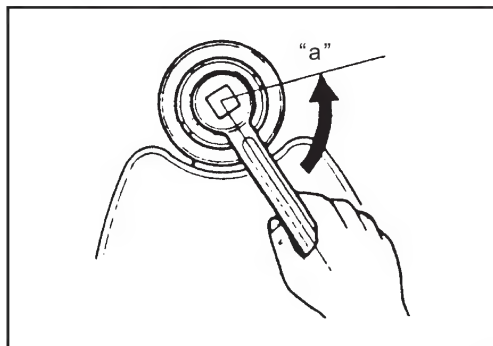
- 4) Set the steering stem lower bracket to the frame.
- 5) Install the steering stem nut (1) as shown below.
 - a) Tighten the steering stem nut to 20 N·m (2.0 kgf-m, 15.0 lbf-ft) with the special tools.
 - b) Loosen the steering stem nut 1/4 turn "a".
 - c) Tighten the steering stem nut to 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft) with the special tools.

Special tool**(A): 09940-14920****Tightening torque**

Steering stem nut (a): 20 N·m (2.0 kgf-m, 15.0 lbf-ft) → turn counterclockwise 1/4 → 5.0 N·m (0.51 kgf-m, 3.70 lbf-ft)

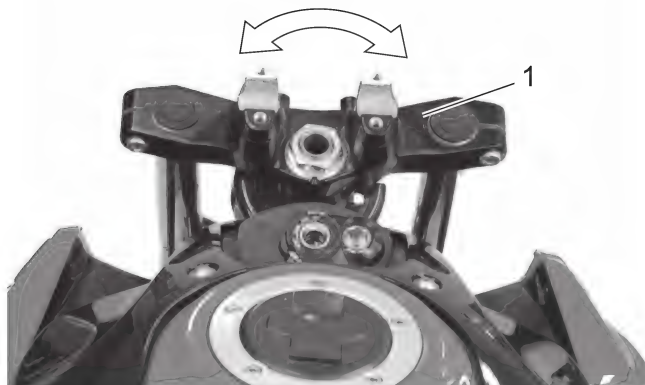


IH23K1620034-01



IF40J2620007-01

- 6) Turn the steering stem (1) quickly to the left and right more than three times to seat the stem properly.



IH23K2620028-01

- 7) In this condition, check that the steering stem can turn smoothly without rattle and stiffness. If there is a rattle or heavy movement, readjust the tightness by the stem nut.

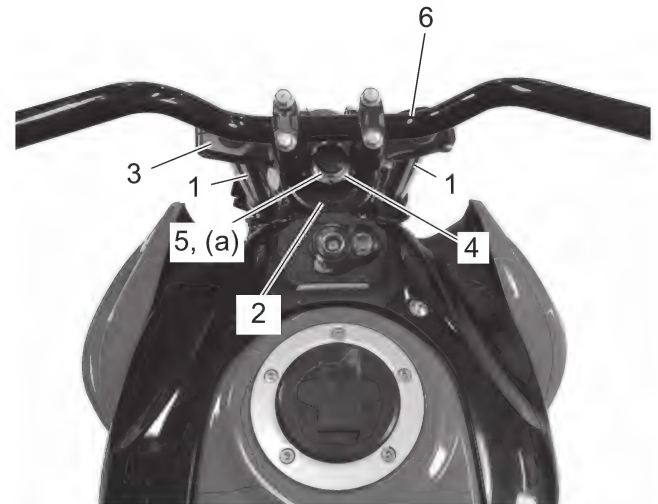
NOTE

This adjustment may vary depending on the motorcycle individually.

- 8) Install the front forks (1) in proper position. (Page 2B-2)
- 9) Install the steering lock plate (2), steering stem upper bracket (3), washer (4) and steering stem head nut (5) temporarily.
- 10) Install the handlebars (6). (Page 6B-16)
- 11) Tighten the steering stem head nut to the specified torque.

Tightening torque

Steering stem head nut (a): 30 N·m (3.1 kgf-m, 22.5 lbf-ft)



IH23K2620029-01

- 12) Pass the cables correctly and install the headlight housing brace. Refer to "Throttle Cable Routing Diagram" in Section 1D (Page 1D-1).
- 13) Check the steering tension. (Page 6B-16)

Steering Stem Inspection

BENH23K26206011

GSX R 150 Model

Refer to "Steering Stem Removal and Installation" (Page 6B-20).

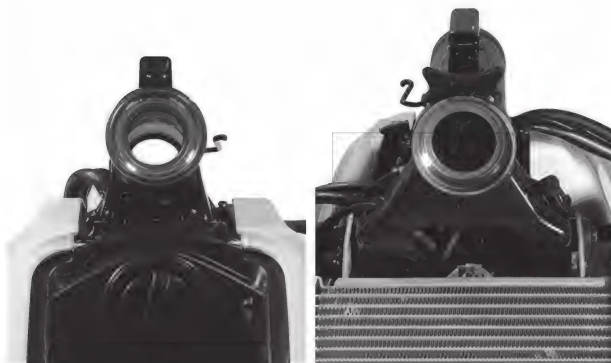
Inspect the removed parts for the following abnormalities:

- Distortion of the steering stem
- Steering stem steel ball wear or damage
- Abnormal bearing noise
- Steering stem steel ball race wear or damage

If any abnormal points are found, replace defective parts with new ones.



IH23K1620036-01



IH23K1620037-01

GSX S 150 Model

Refer to "Steering Stem Removal and Installation" (Page 6B-20).

Inspect the removed parts for the following abnormalities:

- Distortion of the steering stem
- Steering stem steel ball wear or damage
- Abnormal bearing noise
- Steering stem steel ball race wear or damage

If any abnormal points are found, replace defective parts with new ones.



IH23K1620036-01



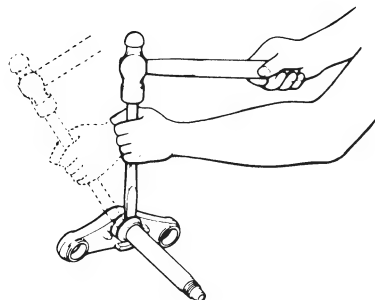
IH23K2620030-01

Steering Stem Bearing Removal and Installation

BENH23K26206012

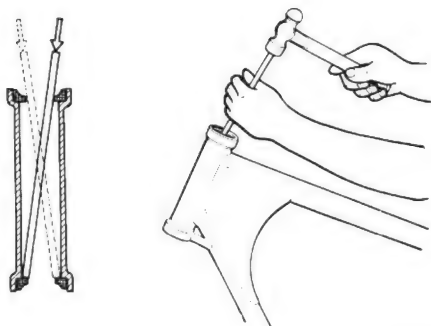
Removal

- 1) Remove the dust cover, steering stem upper steel ball outer race and steering stem upper/lower steel balls. (Page 6B-20)
- 2) Remove the steering stem lower steel ball outer race using a chisel.



I649G1620033-02

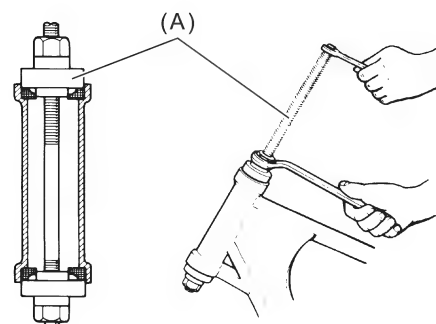
- 3) Drive out the steering stem upper and lower steel ball inner races using a suitable bar.



IE29J1620050-01

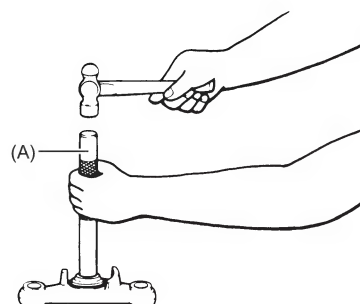
Installation

- 1) Press in new steering stem upper / lower steel ball inner races using the special tool.

Special tool**(A): 09941-34513**

IF34J1620041-01

- 2) Press in a new steering stem lower steel ball outer race using the special tool.

Special tool**(A): 09941-74911**

IF34J1620043-01

- 3) Apply grease to the steering stem upper/lower steel ball races, and then install new steering stem upper/lower steel balls and the steering stem lower bracket to the frame. (Page 6B-20)

Specifications

Tightening Torque Specifications

BENH23K26207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Right handlebar nut	28	2.9	21.0	☞ (Page 6B-6)
Handlebar balancer screw	5.5	0.56	4.05	☞ (Page 6B-7) / ☞ (Page 6B-8) / ☞ (Page 6B-10) / ☞ (Page 6B-11)
Left handlebar nut	28	2.9	21.0	☞ (Page 6B-7)
Clutch lever holder bolt	10	1.0	7.5	☞ (Page 6B-7) / ☞ (Page 6B-11)
Handlebar bolt	28	2.9	21.0	☞ (Page 6B-9)
Steering stem head nut	30	3.1	22.5	☞ (Page 6B-16) / ☞ (Page 6B-18) / ☞ (Page 6B-22) / ☞ (Page 6B-24)
Front fork upper clamp bolt	23	2.3	17.0	☞ (Page 6B-16) / ☞ (Page 6B-18)
Steering stem nut	20 N·m (2.0 kgf·m, 15.0 lbf·ft) → turn counterclockwise 1/4 → 5.0 N·m (0.51 kgf· m, 3.70 lbf·ft)			☞ (Page 6B-21) / ☞ (Page 6B-24)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Handlebar Components” (Page 6B-1)

“Handlebar Construction” (Page 6B-3)

“Steering Stem Components” (Page 6B-13)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K26208001

Material	SUZUKI recommended product or Specification		Note
Adhesive	Handle grip glue	—	☞ (Page 6B-8) / ☞ (Page 6B-11)
Grease	SUZUKI SUPER GREASE A	P/No.: 99000-25011	☞ (Page 6B-6) / ☞ (Page 6B-10) / ☞ (Page 6B-21) / ☞ (Page 6B-23)
	SUZUKI WATER RESISTANT GREASE EP2	P/No.: 99000-25350	☞ (Page 6B-6) / ☞ (Page 6B-9)

NOTE

Required service material(s) is also described in:

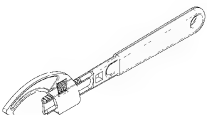
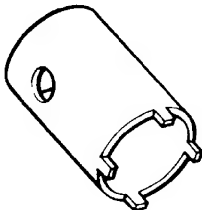

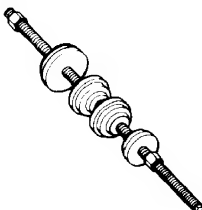
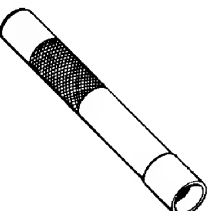
“Handlebar Components” (Page 6B-1)

“Handlebar Construction” (Page 6B-3)

“Steering Stem Components” (Page 6B-13)

Special Tool

BENH23K26208002

09910-60620 Adjustable wrench ☞ (Page 6B-16) 	09940-14920 Steering stem nut socket wrench ☞ (Page 6B-20) / ☞ (Page 6B-21) / ☞ (Page 6B-22) / ☞ (Page 6B-24) 
09940-92720 Spring scale (400 - 1000 g) ☞ (Page 6B-16) 	09941-34513 Bearing installer set ☞ (Page 6B-26) 
09941-74911 Steering stem bearing installer ☞ (Page 6B-26) 	

Section 9

Body and Accessories

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Precautions

Precautions

Precautions for Electrical System

Refer to “General Precautions” in Section 00 (Page 00-1) and “Precautions for Electrical Circuit Service” in Section 00 (Page 00-2). BENH23K29000001

Component Location

Electrical Components Location

Refer to “Electrical Components Location” in Section 0A (Page 0A-5). BENH23K29003001

Wiring Systems

General Description

Abbreviations

BENH23K29101001

Refer to the “Abbreviations” in Section 0A (Page 0A-1) for the general abbreviations.

Wire / Connector Color Symbols

BENH23K29101002

Refer to “Wire Color Symbols” in Section 0A (Page 0A-3).

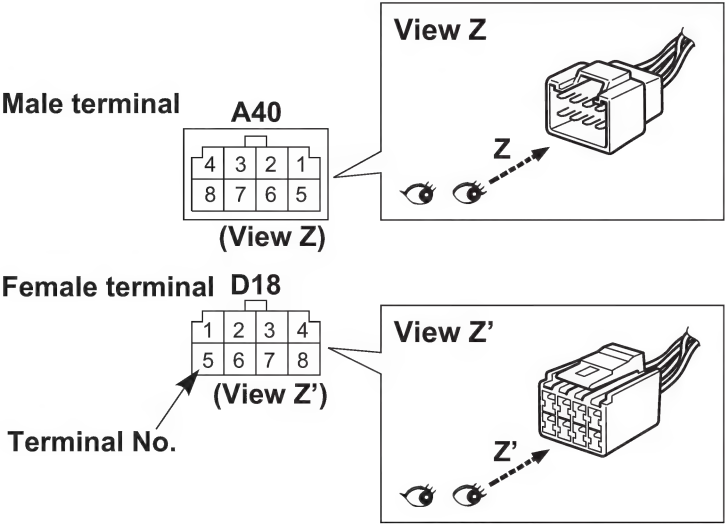
How to Read Terminal Nos.

BENH23K29101003

The connector shape and terminal layout shown in this manual are those when viewed from “Z” in the illustration.

NOTE

- Molded terminal numbers that are different from the above can be found on some connectors in rare cases.
- These molded numbers are not applied in this manual.



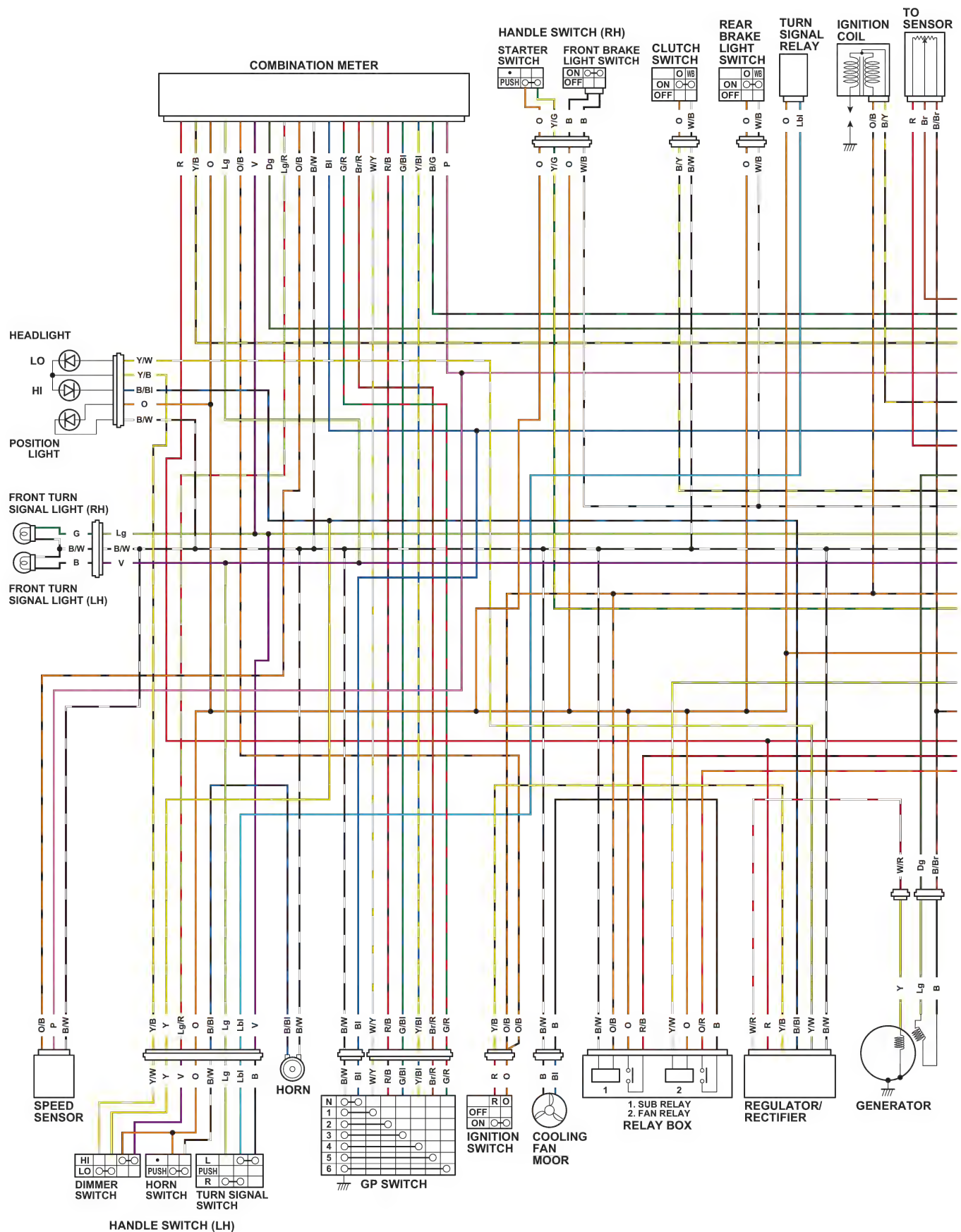
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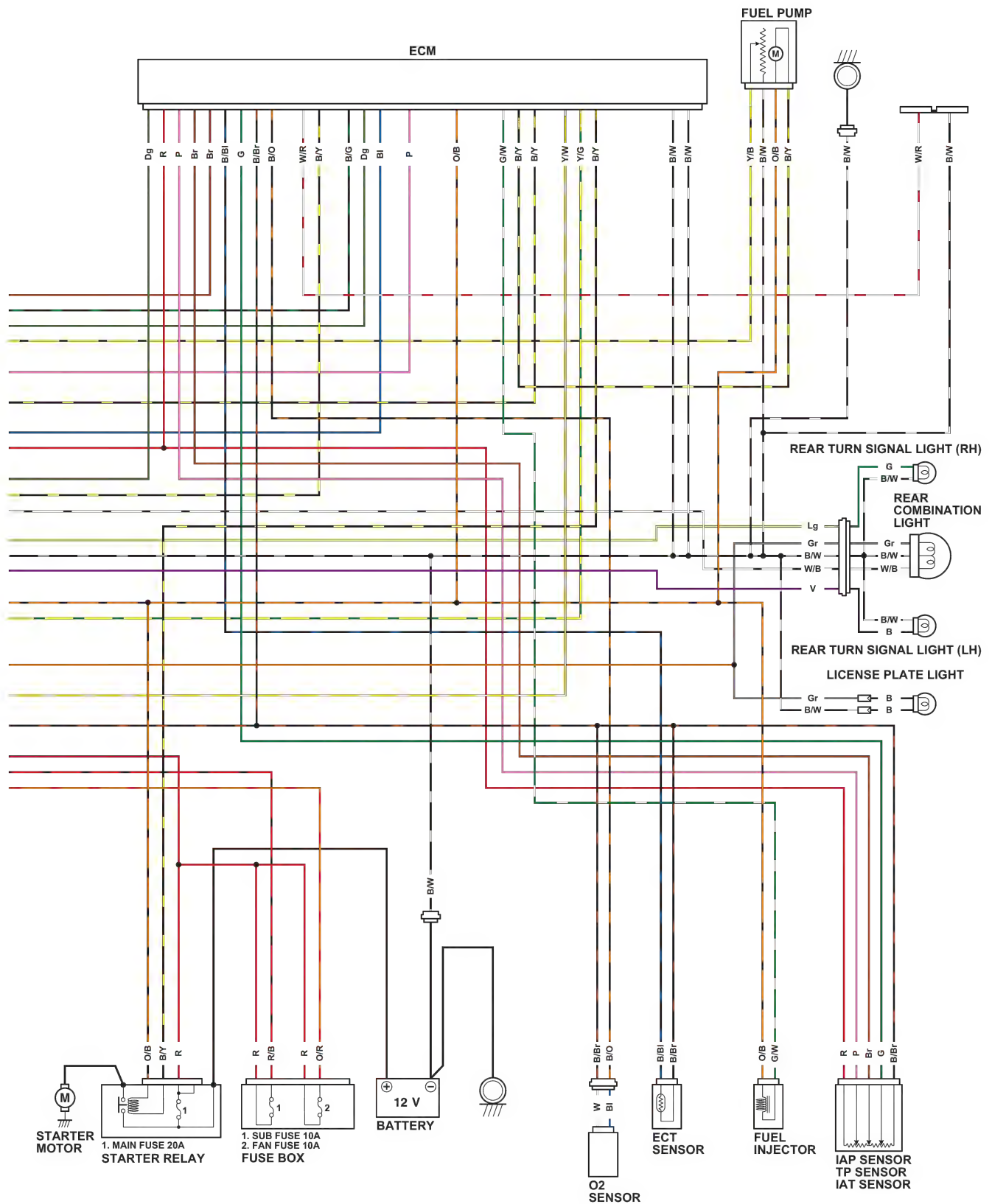
Schematic and Routing Diagram

Wiring Diagram

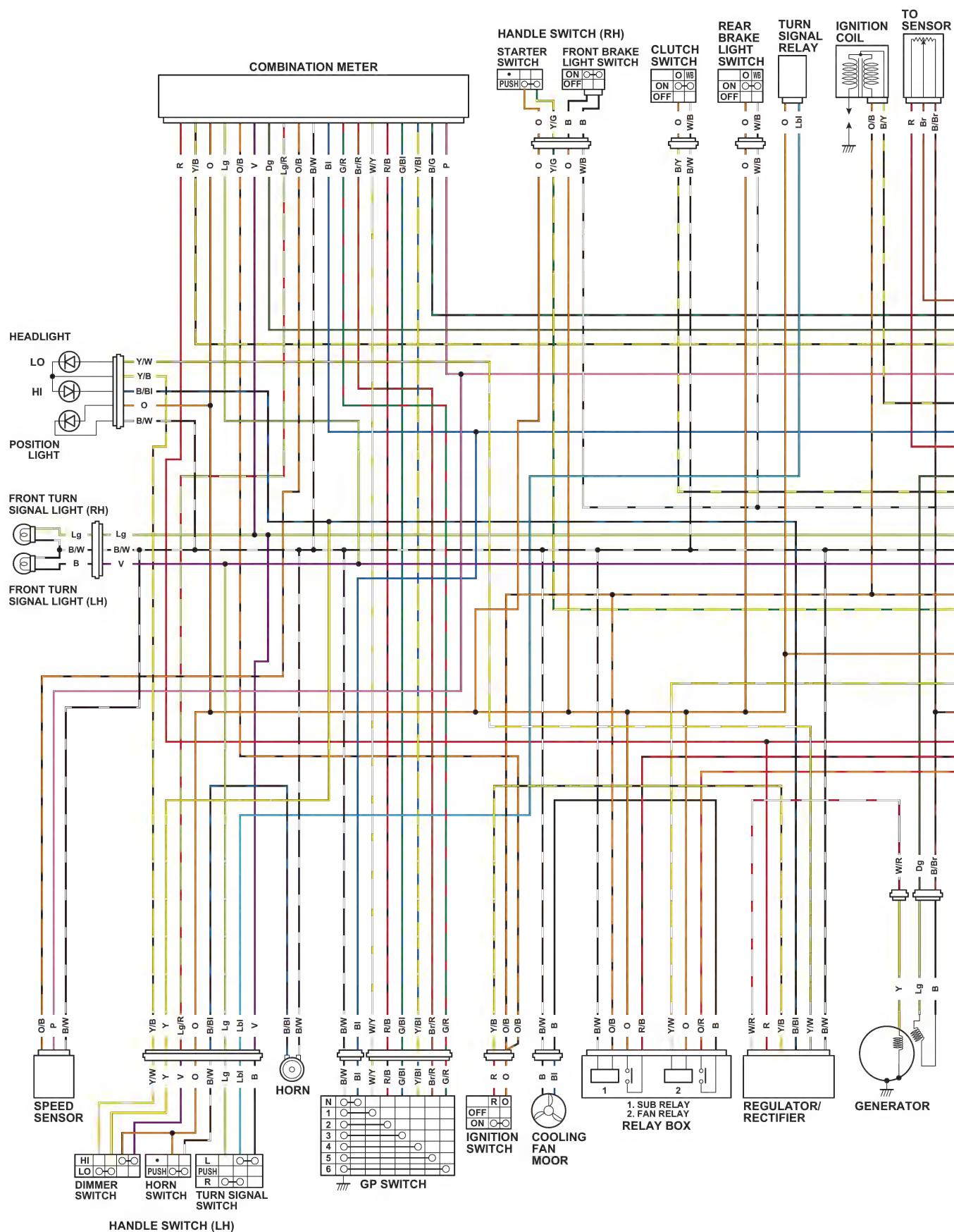
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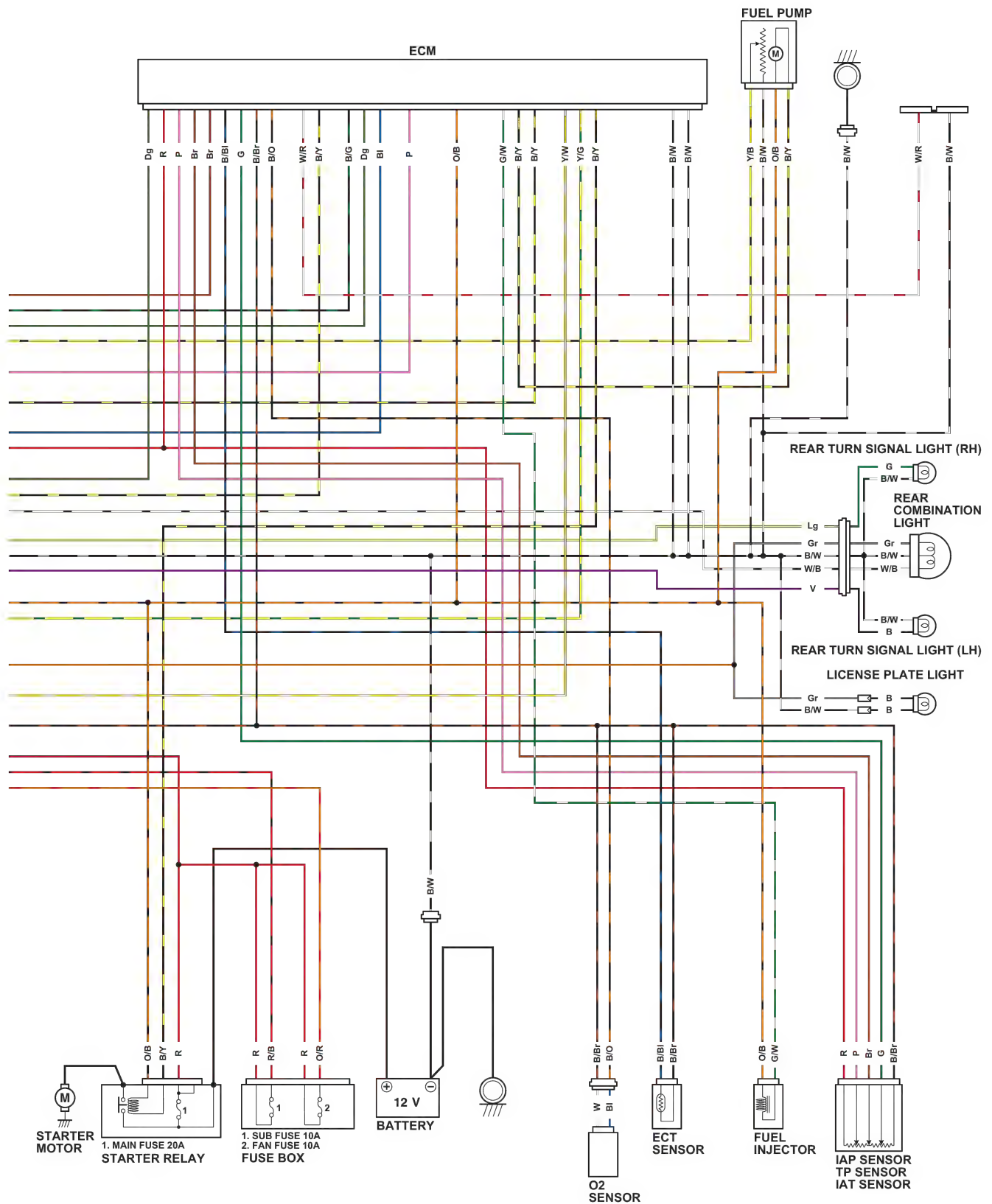
GSX R 150 Model





GSX S 150 Model

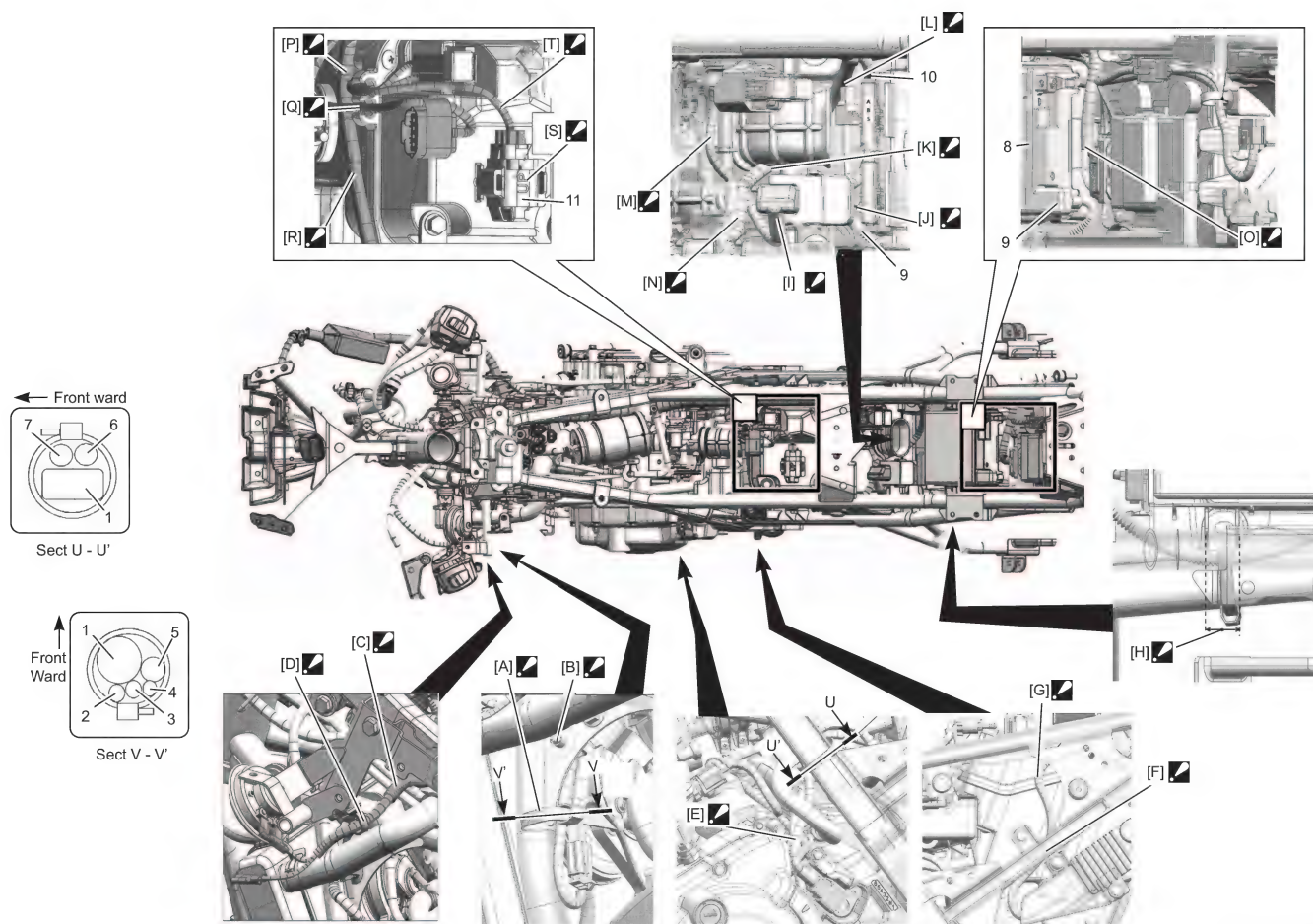




Wiring Harness Routing Diagram

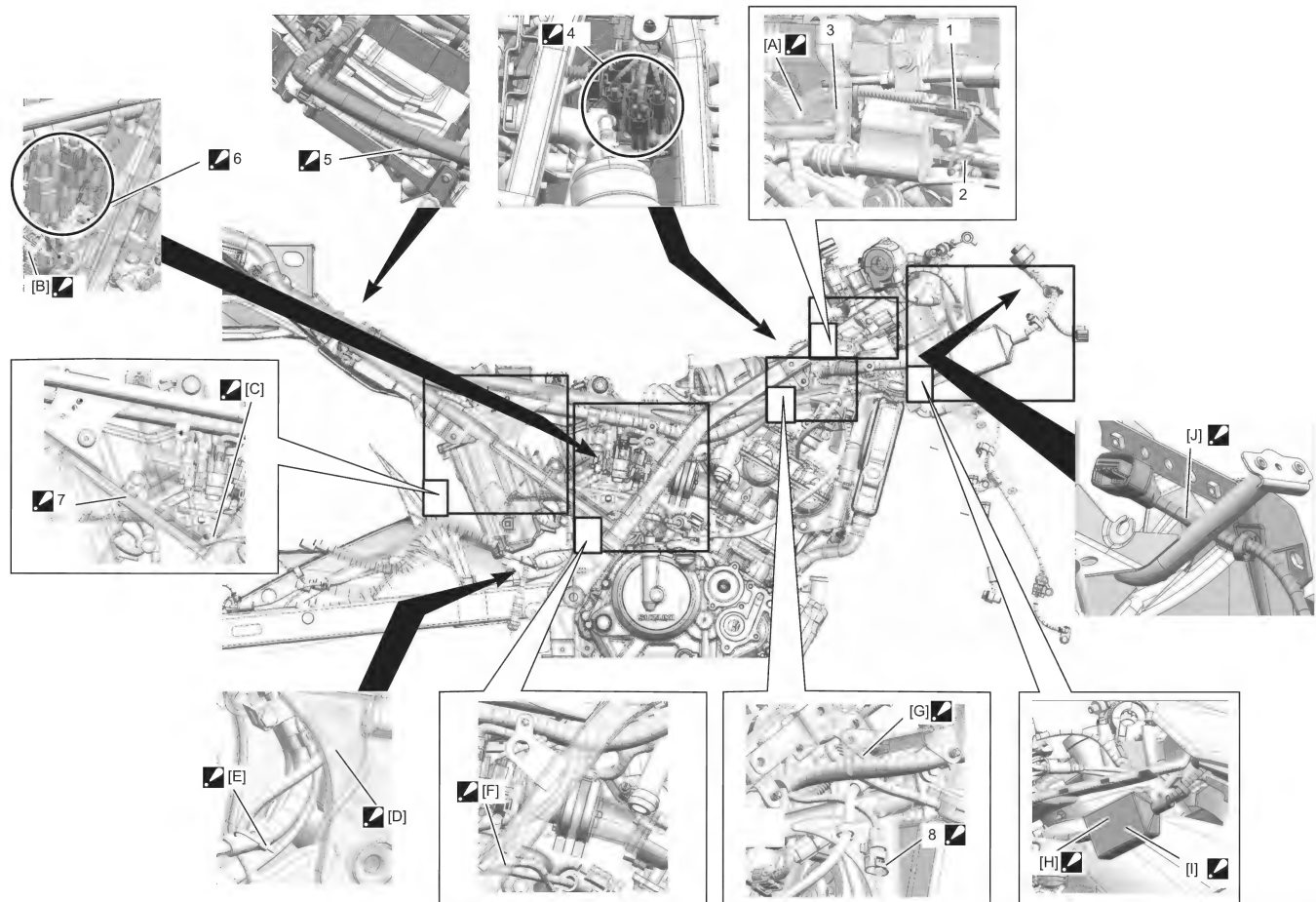
GSX R 150 Model

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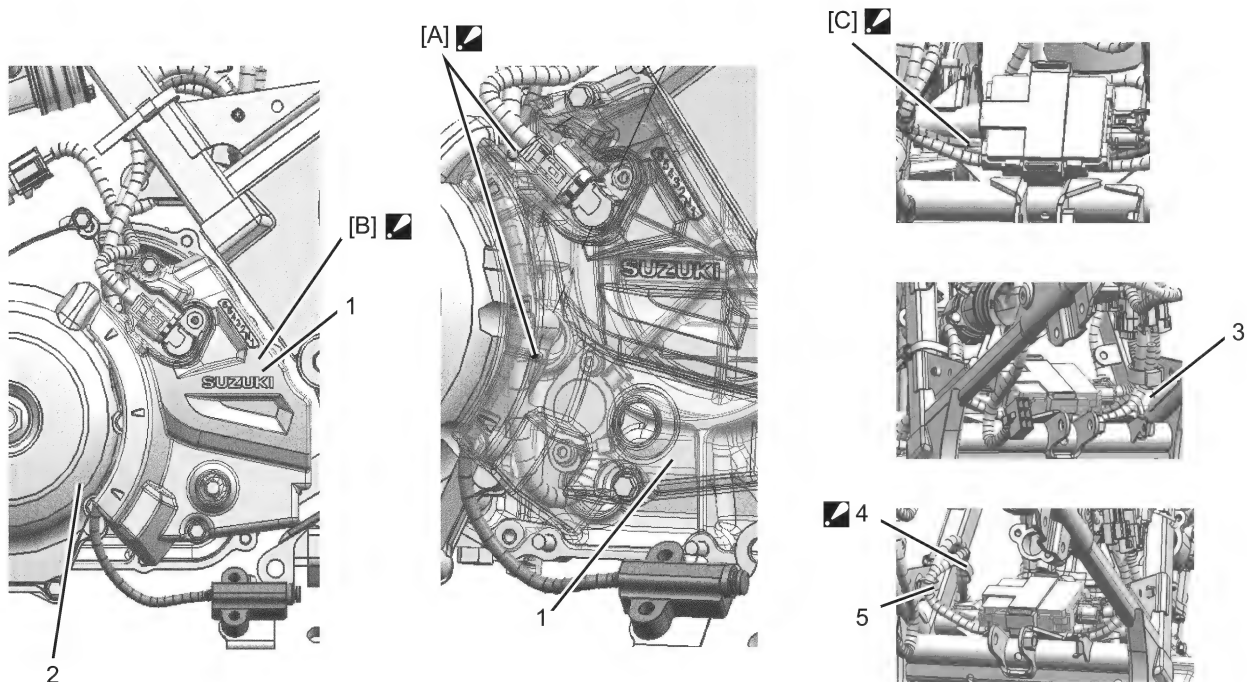
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<div> <div></div> <div>[A]: After fixed clamp touch to the upper side bracket</div> </div>	<div> <div></div> <div>[Q]: Fuel tank branch is put on the air cleaner guide before fuel tank mount</div> </div>
<div> <div></div> <div>[B]: Insert clamp (insert frontward hole)</div> </div>	<div> <div></div> <div>[R]: GPS branch goes behind of fuel pump branch</div> </div>
<div> <div></div> <div>[C]: Goes upside throttle cables</div> </div>	<div> <div></div> <div>[S]: Fuel cut sensor branch goes between turn-relay and air cleaner</div> </div>
<div> <div></div> <div>[D]: Insert clamp</div> </div>	<div> <div></div> <div>[T]: Fuel cut sensor is face the 'UP' mark upward</div> </div>
<div> <div></div> <div>[E]: Speed sensor branch <ul style="list-style-type: none"> Goes between starter motor and engine mounting portion Goes under magneto lead and GPS lead </div> </div>	<div> <div></div> <div>1. Frame</div> </div>
<div> <div></div> <div>[F]: Rectifier & regulator branch goes rear-side of air cleaner mounting portion and bottom branch goes between rib and rectifier & regulator</div> </div>	<div> <div></div> <div>2. Main wire harness</div> </div>
<div> <div></div> <div>[G]: Rectifier & regulator goes upper side of mating face of air cleaner</div> </div>	<div> <div></div> <div>3. Fan motor lead</div> </div>
<div> <div></div> <div>[H]: Clamping position is between rear-fender rib</div> </div>	<div> <div></div> <div>4. Canister purge no. 2 hose (if equipped)</div> </div>
<div> <div></div> <div>[I]: Starter motor relay branch goes outside of body</div> </div>	<div> <div></div> <div>5. Reserve tank inlet hose</div> </div>
<div> <div></div> <div>[J]: Fuse branch under starter motor lead and starter motor relay</div> </div>	<div> <div></div> <div>6. Magneto lead</div> </div>
<div> <div></div> <div>[K]: Rectifier & regulator branch under air cleaner duct</div> </div>	<div> <div></div> <div>7. Gear position lead</div> </div>
<div> <div></div> <div>[L]: Rectifier & regulator branch pass inside starter motor lead</div> </div>	<div> <div></div> <div>8. Battery</div> </div>
<div> <div></div> <div>[M]: Relay box branch goes front side of air cleaner duct</div> </div>	<div> <div></div> <div>9. Terminal plus battery</div> </div>
<div> <div></div> <div>[N]: Rectifier & regulator branch goes inside of air cleaner rib</div> </div>	<div> <div></div> <div>10. Motor starter lead wire</div> </div>
<div> <div></div> <div>[O]: Put terminal license plat light and rear turn signal</div> </div>	<div> <div></div> <div>11. TO sensor</div> </div>
<div> <div></div> <div>[P]: All branch goes inside of starter motor and battery minus lead</div> </div>	







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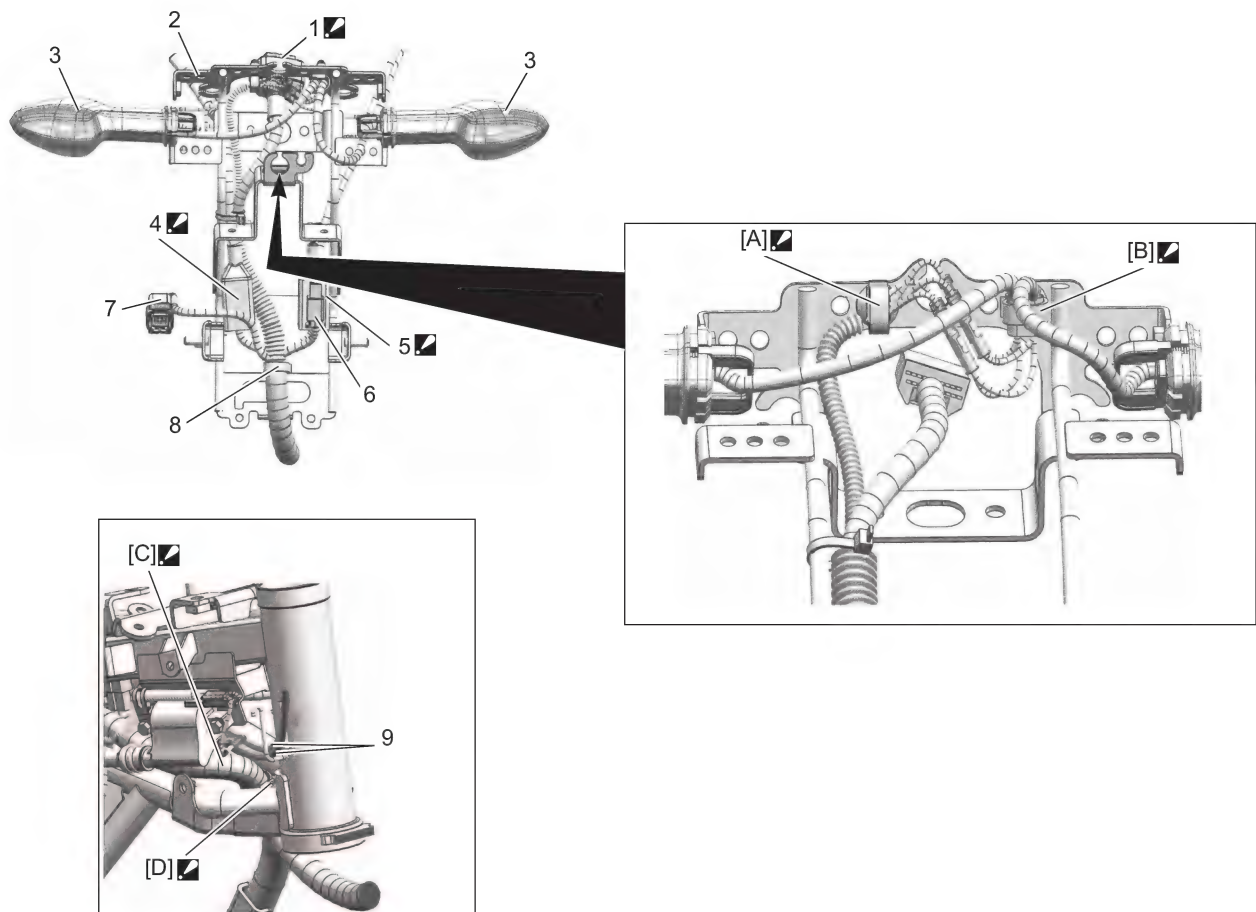
☑ [A]: Hose goes over the wires	1. Ignition coil connector upside
☑ [B]: Magneto and gear position lead wire goes between keyless unit and bracket	2. Ignition coil connector bottom
☑ [C]: Starter motor lead wire and battery minus lead wire go over the bridge tube	3. Ignition coil lead
☑ [D]: Stop lamp switch lead goes under the frame	☑ 4. Left & right handle switch, ignition switch and clutch switch connectors: After connected tie the wires and set clamp
☑ [E]: Stop lamp switch lead to the brake hose	5. Battery minus lead under main wiring harness
☑ [F]: Speed sensor branch goes inside of the starter motor lead and battery minus lead	6. Stop lamp switch, magneto, gear position switch, keyless unit
☑ [G]: Wire harness no. 2 branch goes bracket front	☑ 7. Starter motor lead and battery minus lead: Tie on the blue tape and between the brackets cut surplus. Cut end turn inside
☑ [H]: After connected boots covered vertically and opening face under side	8. O2 sensor connector insert front side hole
☑ [I]: Set connectors into PVC boot	
☑ [J]: Speed meter branch goes under the brace	



IH23K1910903-01

 [A]: Side stand switch lead between two of boss and magneto cover	2. Magneto side cover
 [B]: Side stand switch lead and gear position sensor lead between magneto cover and fixed by engine sprocket	3. Clamp: <ul style="list-style-type: none">• Harness• Magneto lead• Stop light switch lead• Side stand switch lead
 [C]: Lead wires between bracket and keyless unit	 4. Clamp: <ul style="list-style-type: none">• Gear position sensor lead• Magneto lead• Stop light switch lead Set lock outside of frame, surplus to bottom
1. Engine sprocket cover	5. Clamp: <ul style="list-style-type: none">• Gear position sensor lead• Magneto lead• Stop light switch lead

GSX S 150 Model



IH23K2910903-02

☑ [A]: Insert the clamp to the INNER hole the brace after connected the terminals.	3. Front turn signal assembly
☑ [B]: Insert the clamp to the OUTER hole the brace after connected the terminals.	☑ 4. Right handle switch coupler: After connected boots covered vertically and opening face under side
☑ [C]: Route main harness right-side of throttle cable.	☑ 5. Left handle switch coupler: After connected boots covered vertically and opening face under side
☑ [D]: Insert clamp	6. Headlight coupler
	7. Clutch switch
☑ 1. Speedometer: After connected connector, fit the boot to the speedometer certainly	8. Clamp
2. Headlight housing brace	9. Throttle cable assembly

Component Location

Electrical Components Location

BENH23K29103001

Refer to “Electrical Components Location” in Section 0A (Page 0A-5).

Lighting Systems

Precautions

Precautions for Lighting Systems

BENH23K29200001

NOTICE

- When you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soap water to prevent premature bulb failure.
- Do not use the bulb of a wattage other than specification.
- To avoid damage to the LED, do not connect the headlight LO circuit to the battery or 12 V power source directly.

Diagnostic Information and Procedures

Headlight Symptom Diagnosis

BENH23K29204001

Condition	Possible cause	Correction / Reference Item
Low beam does not light up	Faulty regulator/rectifier.	Replace regulator/rectifier. (Page 1J-9)
	Faulty LED.	Replace headlight assembly. (Page 9B-2)
	Faulty wiring or ground.	Repair wiring. (Page 9A-2)
	Faulty dimmer switch.	Check dimmer switch. (Page 9B-14)
High beam does not light up	Faulty regulator/rectifier.	Replace regulator/rectifier. (Page 1J-9)
	Faulty LED.	Replace headlight assembly. (Page 9B-2)
	Faulty wiring or ground.	Repair wiring. (Page 9A-2)
	Faulty dimmer switch.	Check dimmer switch. (Page 9B-14)

Turn Signal Light Symptom Diagnosis

BENH23K29204002

Condition	Possible cause	Correction / Reference Item
Flash rate high or one side only flashes	Bulb blown.	Replace bulb. (Page 9B-9)
	Incorrect bulb.	Replace bulb. (Page 9B-9)
	Faulty turn signal relay.	Check turn signal relay. (Page 9B-13)
	Open circuit or high resistance between turn signal switch and non lighting bulb.	Repair wiring. (Page 9A-2)
Flash rate low	Supply voltage low or high resistance.	Check charging system. (Page 1J-4) Repair wiring. (Page 9A-2)
	Faulty turn signal relay.	Check turn signal relay. (Page 9B-13)

Rear Brake Light Symptom Diagnosis

BENH23K29204003

Condition	Possible cause	Correction / Reference Item
All lights do not light up	Faulty wiring or grounding.	Repair wiring. (Page 9A-2)
Tail light do not light up	Bulb blown.	Replace bulb. (Page 9B-9)
	Faulty wiring or grounding.	Repair wiring. (Page 9A-2)
Brake light do not light up	Faulty front brake light switch.	Check front brake light switch. (Page 4A-5)
	Faulty rear brake light switch.	Check rear brake light switch. (Page 4A-6)
	Faulty wiring or grounding.	Repair wiring. (Page 9A-2)
	Faulty brake light bulb.	Replace bulb. (Page 9B-9)
Brake light stay on	Faulty front brake light switch.	Check front brake light switch. (Page 4A-5)
	Faulty rear brake light switch.	Check rear brake light switch. (Page 4A-6)
	Faulty wiring or grounding.	Repair wiring. (Page 9A-2)

Repair Instructions

Headlight Construction

BENH23K29206001

Refer to "Headlight Housing Construction" in Section 9D (Page 9D-2).

Headlight Removal and Installation

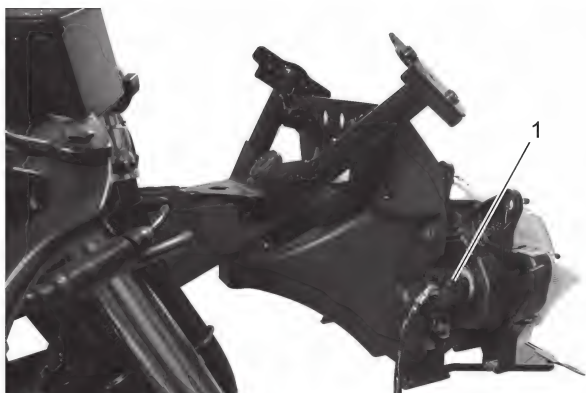
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GSX R 150 Model

Removal

GSX R 150 Model

- 1) Remove front fairing. Refer to "Front Fairing Removal and Installation" in Section 9D (Page 9D-22).
- 2) Disconnect the battery (–) lead wire. Refer to "Battery Removal and Installation" in Section 1J (Page 1J-11).
- 3) Remove body cowling. Refer to "Body Cowling Removal and Installation" in Section 9D (Page 9D-28).
- 4) Remove headlight coupler (1).

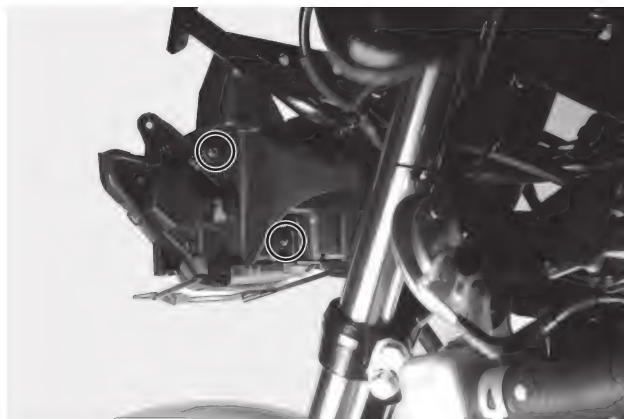


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- 5) Remove the headlight brace bolts.

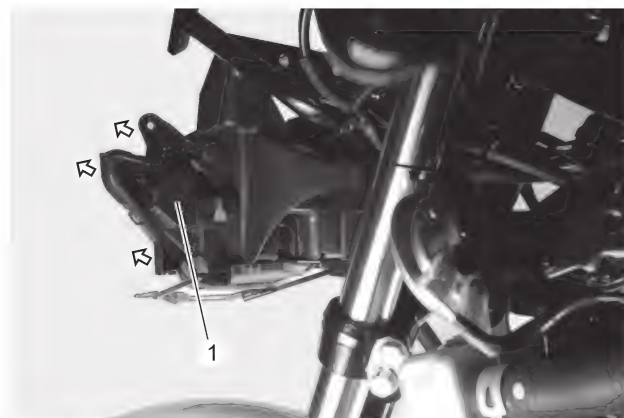


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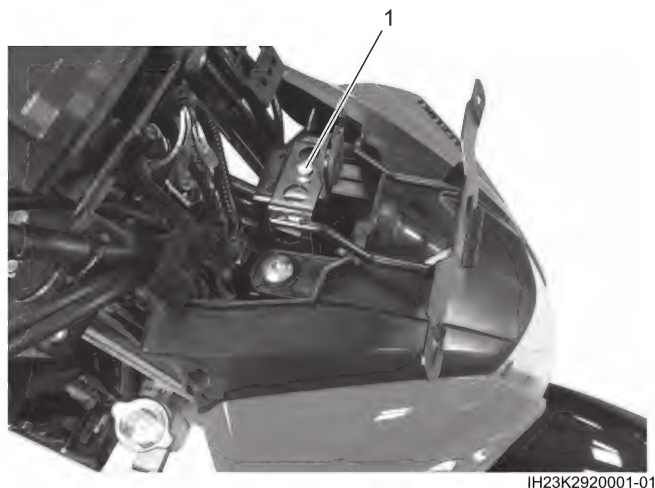
- 6) Pull to the front for remove the headlight (1).



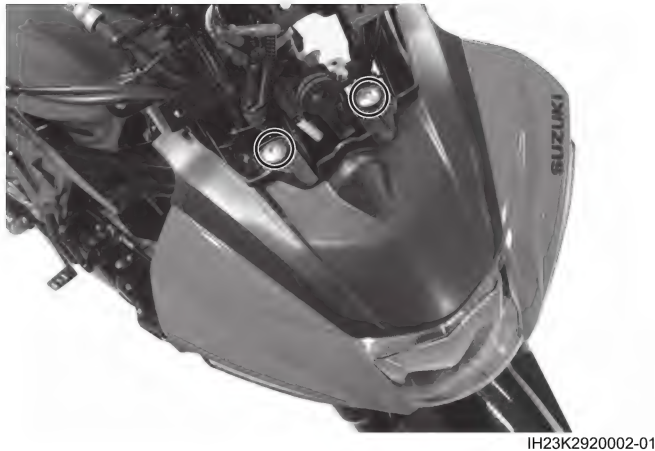
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GSX S 150 Model

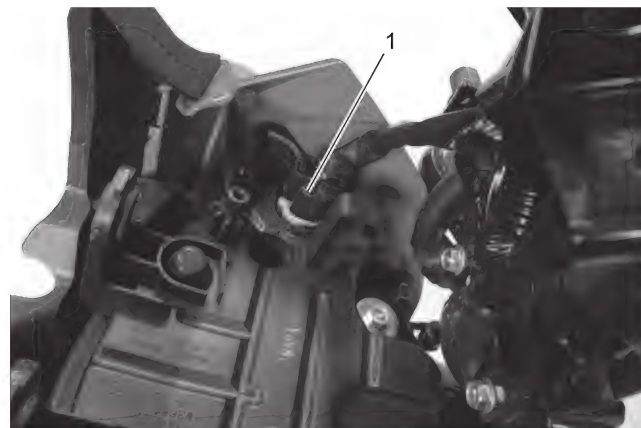
- 1) Disconnect the battery (–) lead wire. Refer to “Battery Removal and Installation” in Section 1J (Page 1J-11).
- 2) Remove meter cover. Refer to “Combination Meter Removal and Installation” in Section 9C (Page 9C-4).
- 3) Remove front turn signal light coupler. Refer to “Front Turn Signal Light Removal and Installation” (Page 9B-11).
- 4) Remove license plate bracket (1).



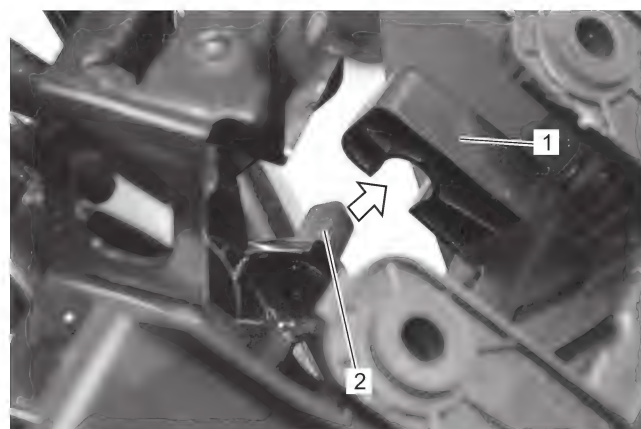
- 5) Remove the headlight brace bolts.



- 6) Remove the headlight coupler (1).



- 7) Release headlight (1) from headlight brace cushion (2) and then remove headlight.

**Installation**

Installation is in the reverse order of removal. Pay attention to the following points:

GSX R 150 Model

- Tighten the headlight brace bolts (1) to the specified torque.

Tightening torque

Headlight brace bolt (a): 5.5 N·m (0.56 kgf-m, 4.05 lbf-ft)

Headlight LED / Position Light LED Replacement

BENH23K29206003

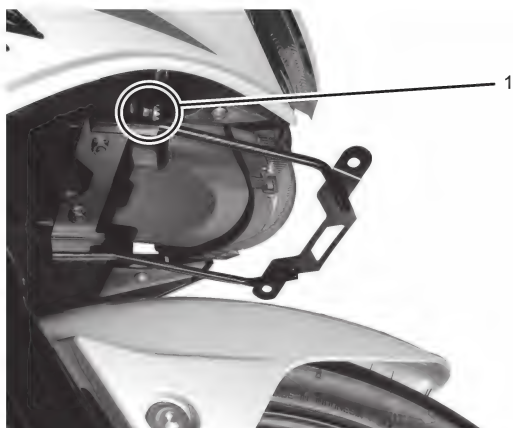
NOTE

If LED operation is abnormal, replace the headlight assembly with a new one. (Page 9B-2)

Headlight Beam Adjustment

BENH23K29206004

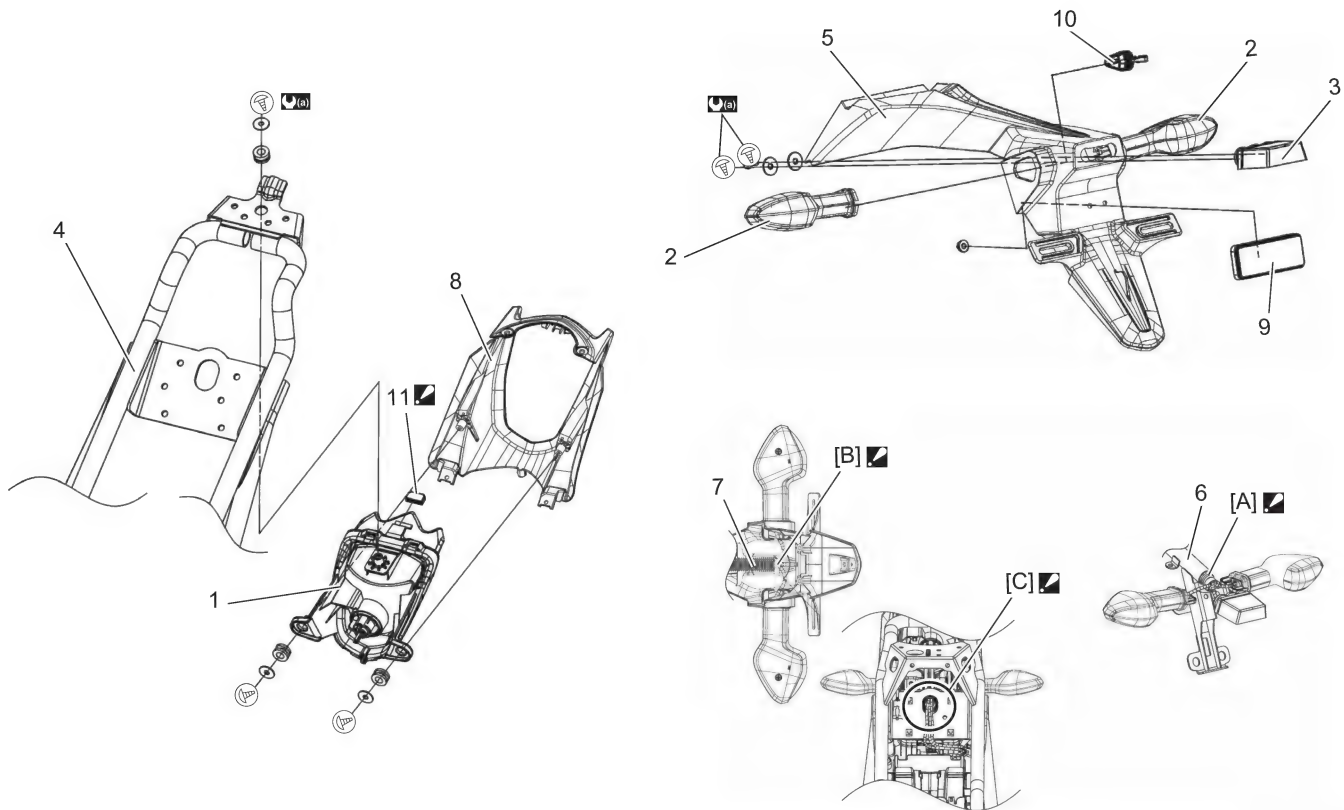
- 1) Using screwdriver, rotate headlight adjust bolt (1) counterclockwise or clockwise to adjust headlight vertical beam.



IH23K1920005-01

Rear Lighting System Construction

BENH23K29206005

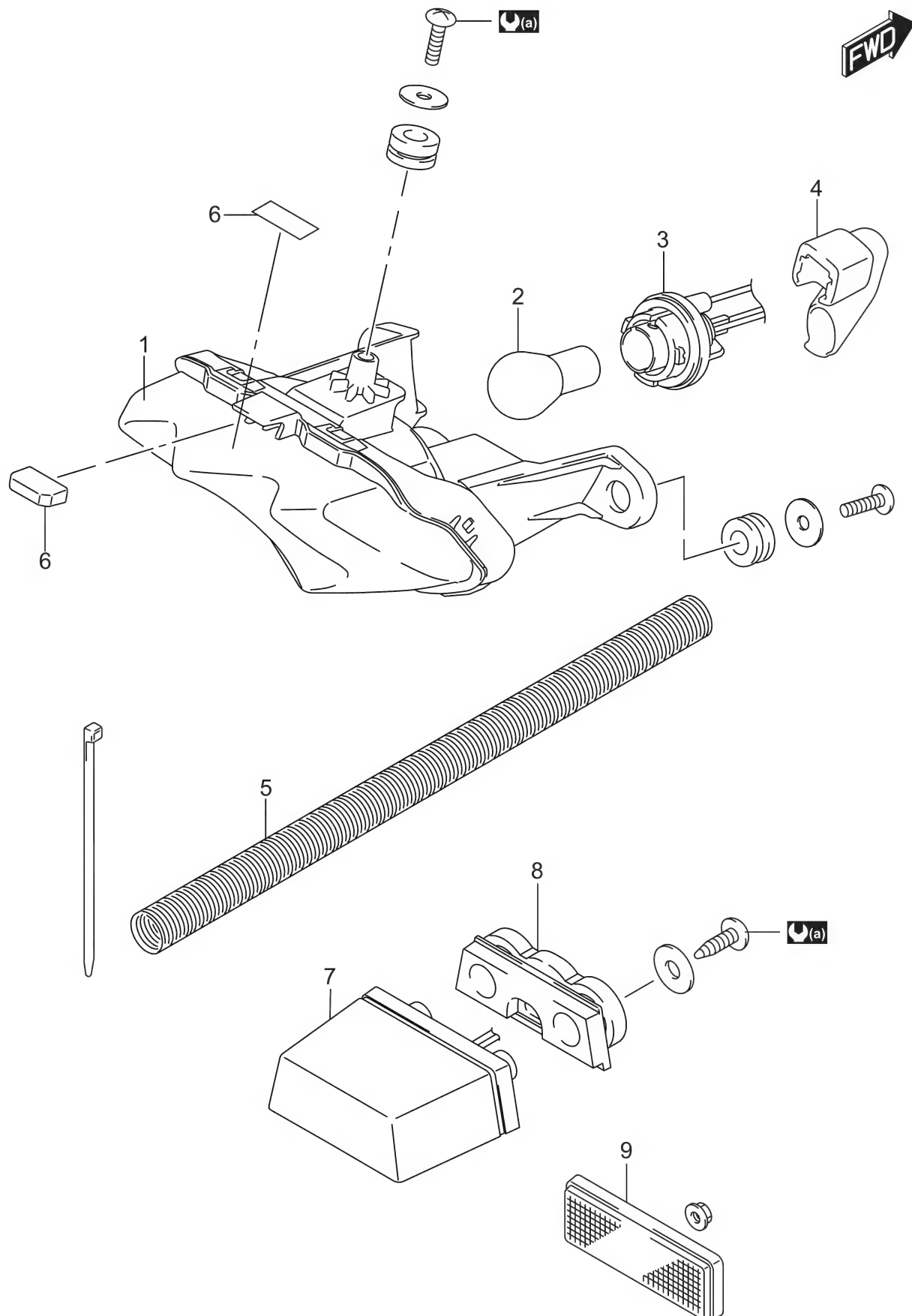


IH23K1920006-02

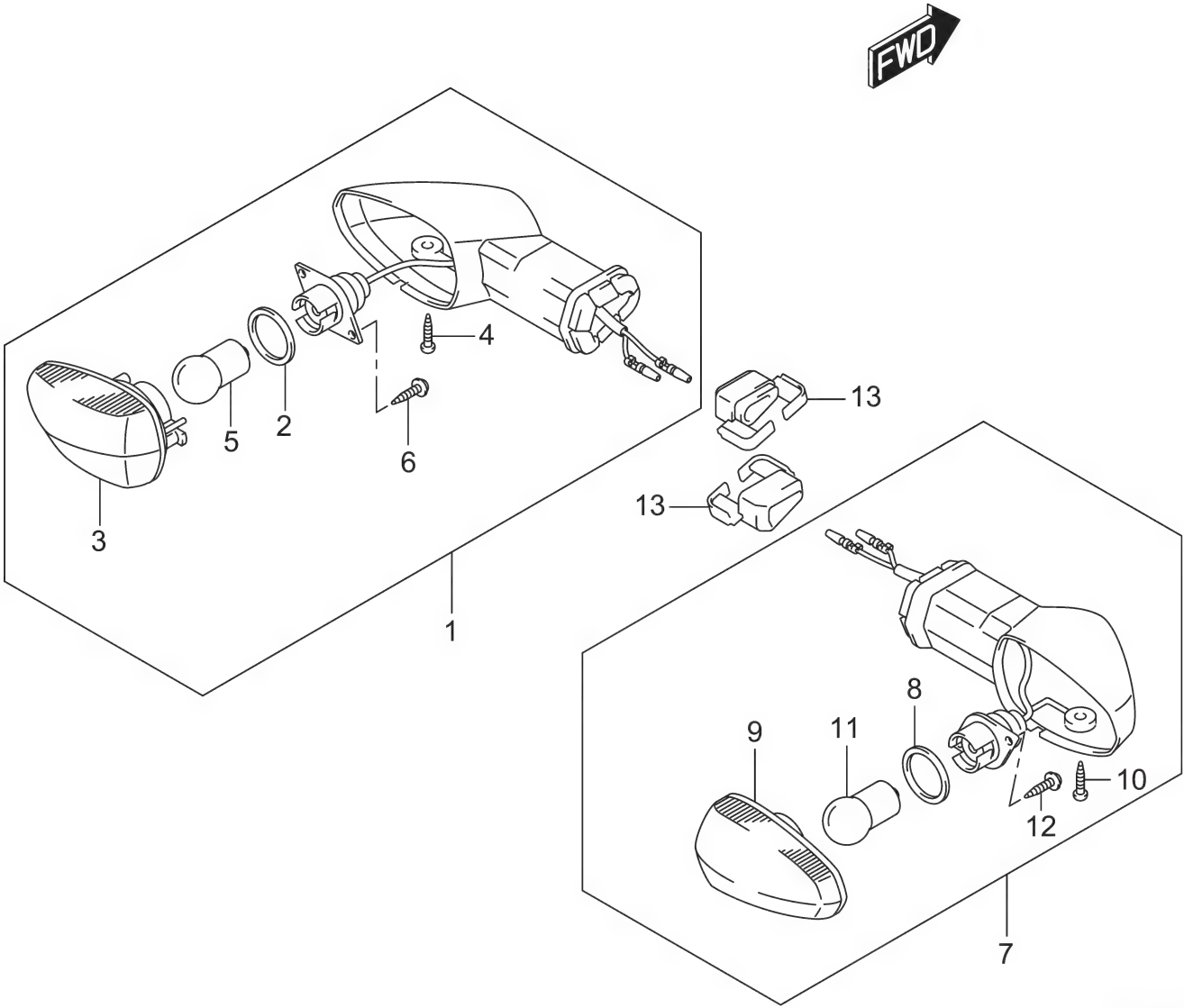
[A]: Insert protector tube in the hole of rear fender brace.	6. Rear fender brace
[B]: Set protector tube attached to clamp.	7. Protector tube
[C]: Pass the license plate light lead wire and turn signal lead wire into protector tube in the hole of rear fender brace.	8. Rear fender front cover
1. Rear brake light	9. Rear reflector
2. Rear turn signal light	10. Rear turn signal plate
3. License plate light	11. Rear brake light cushion : Affix the cushion along the line of rear comb.
4. Frame	(a) : 2.0 N·m (0.20 kgf-m, 1.47 lbf-ft)
5. Rear fender	

Rear Brake Light / Rear Turn Signal Light / License Plate Light Components

BENH23K29206006



IH23K1920007-03



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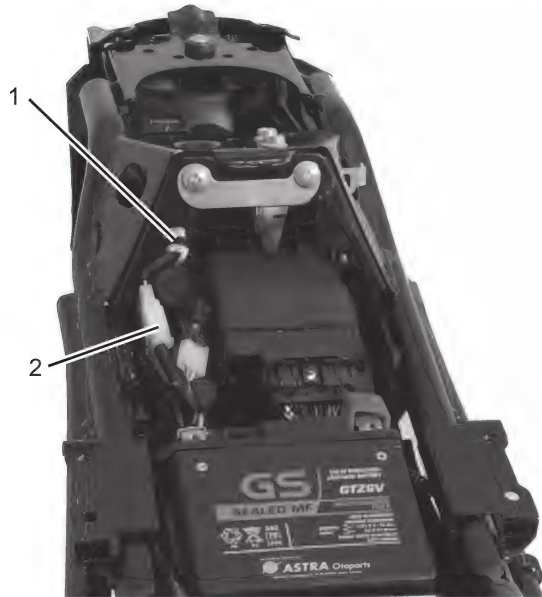
1. Rear brake light lens and housing	6. Rear brake light cushion	11. Rear turn signal housing
2. Bulb (12V21/5W)	7. License plate light	12. Bulb (12V10W)
3. Rear brake light socket	8. Rubber	13. Rear turn signal plate
4. Tube breath	9. Rear reflector	14. Bulb holder
5. Protector tube	10. Rear turn signal lens	

Rear Brake Light Removal and Installation

BENH23K29206007

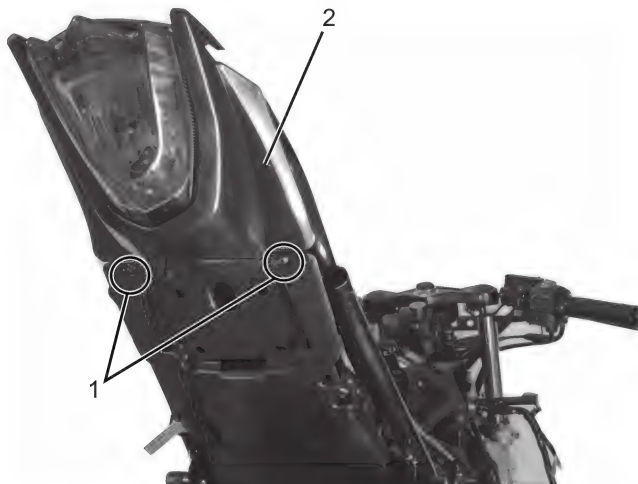
Removal

- 1) Remove rear fender rear. (Page 9D-31)
- 2) Remove front fairing. (Page 9D-22)
- 3) Remove right and left frame cover and frame center cover. (Page 9D-30)
- 4) Cut rear brake light lead wire clamp (1) and then disconnect rear brake light lead wire coupler (2).

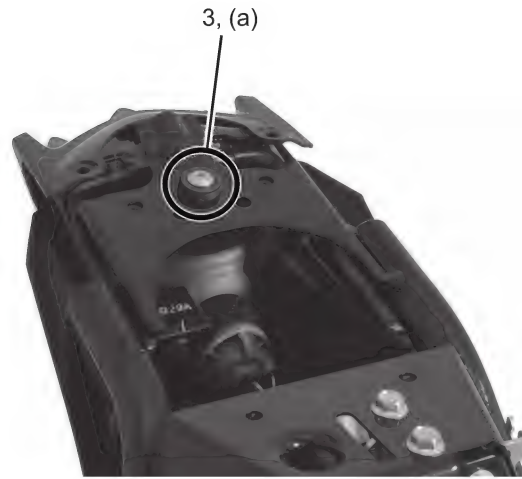


IH23K1920009-01

- 5) Remove rear fender front cover screws (1) and rear brake light screws upper (3) and then pull out rear fender front cover (2) and rear brake light.



IH23K1920010-02



IH23K1920011-04

- 6) Remove rear brake light screw and then remove rear brake light (1) from rear fender front cover (2).



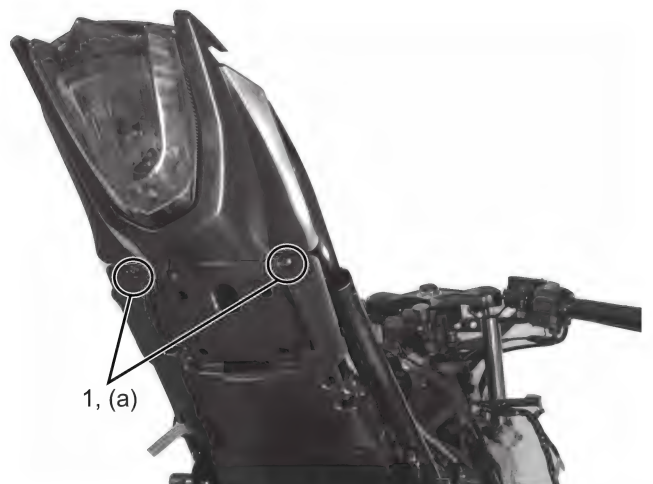
IH23K1920012-02

Installation

Install the combination light in the reverse order of removal.

Pay attention to the following point:

- Tighten the rear fender front screws (1) to the specified torque.



IH23K1920013-02

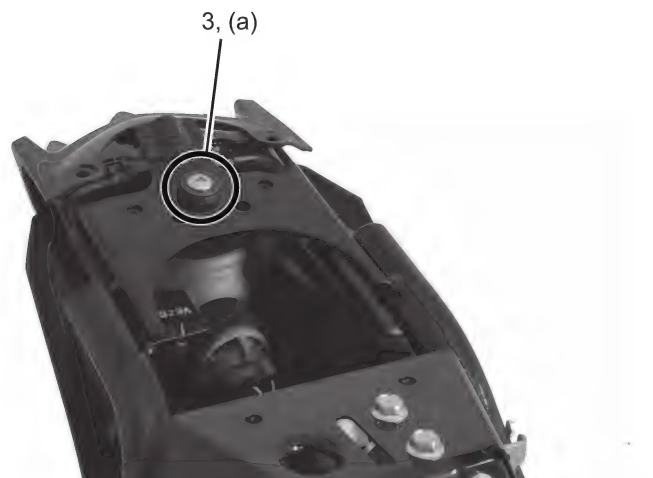
Tightening torque

Rear fender front screw (a): 1.0 N·m (0.10 kgf-m, 0.74 lbf-ft)

- Tighten the rear brake light screws upper (3) to the specified torque.

Tightening torque

Rear combination light screw (a): 2.0 N·m (0.20 kgf-m, 1.47 lbf-ft)

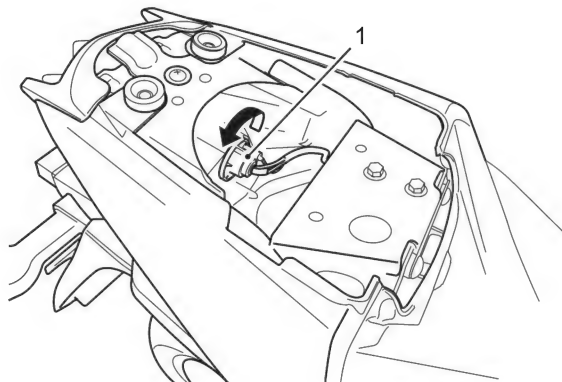


IH23K1920011-04

Rear Brake Light Bulb Replacement

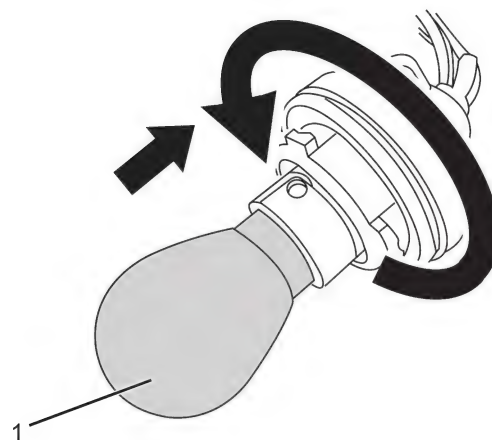
BENH23K29206008

- 1) Open rear seat. (Page 9D-20)
- 2) Turn rear brake light socket (1) counterclockwise and remove it.



IH23K1920014-02

- 3) Push in on the bulb (1), twisting it to the left, and pull it out



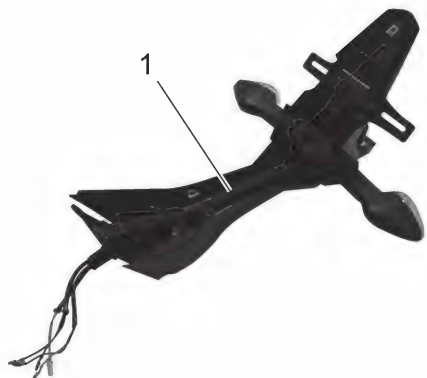
IH23K1920028-01

License Plate Light Removal and Installation

BENH23K29206009

Removal

- 1) Remove rear fender rear. (Page 9D-31)
- 2) Remove rear fender brace (1).



IH23K1920015-01

- 3) Remove license plate light screws.



IH23K1920016-01

- 4) Pull out license plate light (1) for remove.



IH23K1920017-01

Installation

Install license plate light in the reverse order of removal. Pay attention to the following points:

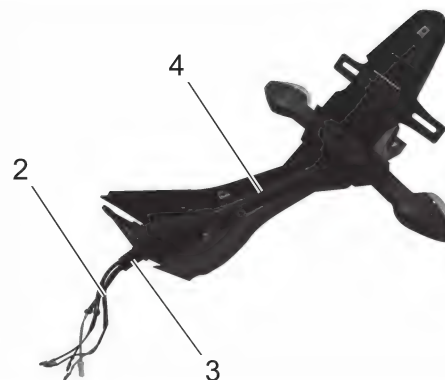
- Tighten the license plate light screws (1) to the specified torque.
- Pass the license plate light lead wire (2) into the protector tube (3) in the rear fender brace hole (4).

Tightening torque

License plate light screw (a): 2.0 N·m (0.20 kgf-m, 1.47 lbf-ft)



IH23K1920018-02



IH23K1920019-01

NOTICE

Be careful not to bent, twist, or damage the license plate light lead wire when you pass into protector tube in the rear fender brace hole.

NOTE

License plate light is assembly.

If LED operation is abnormal, replace the license plate light assembly with a new one.

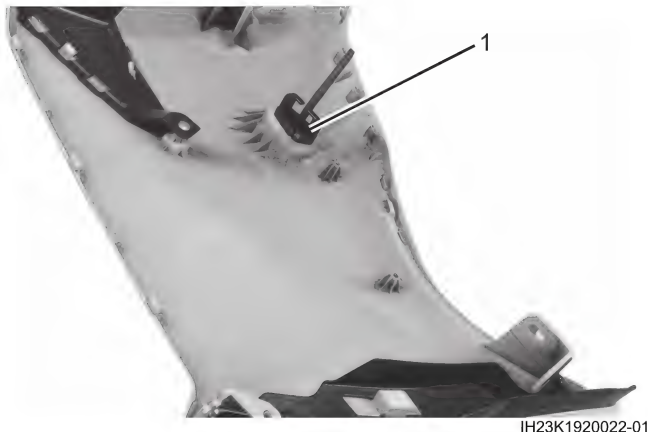
Front Turn Signal Light Removal and Installation

BENH23K29206010

Removal

GSX R 150 Model

- 1) Remove front fairing. (Page 9D-22)
- 2) Remove front turn signal plate (1).

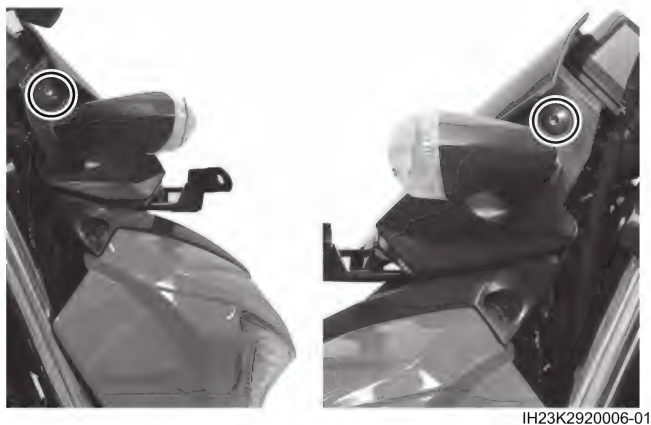


- 3) Remove front turn signal light assembly (1).

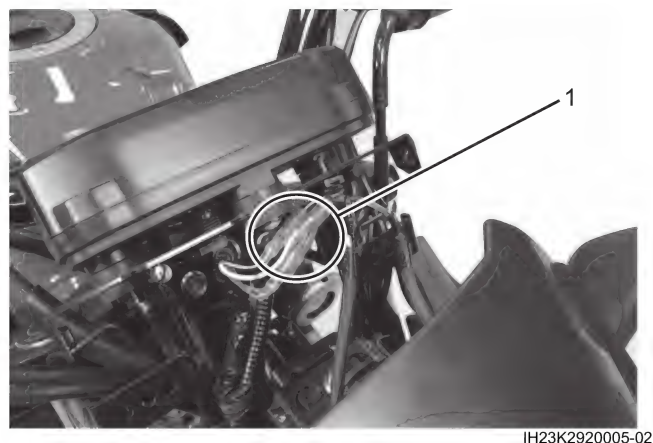


GSX S 150 Model

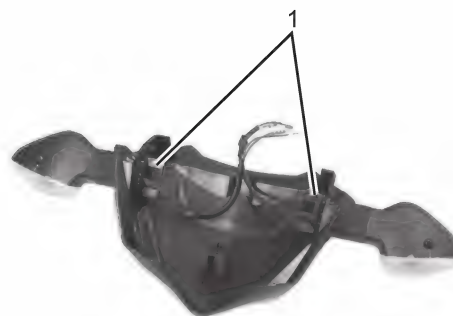
- 1) Remove meter cover bolt.



- 2) Remove front turn signal couplers (1) and remove meter cover.



- 3) Remove front turn signal plate (1).



- 4) Remove front turn signal light assembly (1).



Installation

Install rear turn signal in the reverse order of removal.

Rear Turn Signal Light Removal and Installation

BENH23K29206011

Removal

- 1) Remove rear fender rear. (Page 9D-31)
- 2) Remove rear fender brace (1).



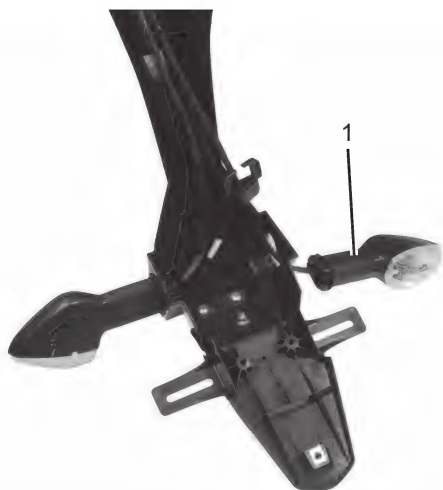
IH23K1920015-01

- 3) Remove rear turn signal plate (1).



IH23K1920020-01

- 4) Remove rear turn signal assembly (1).



IH23K1920021-01

Installation

Install rear turn signal in the reverse order of removal.

Turn Signal Bulb Replacement

BENH23K29206012

- 1) Remove turn signal light screws and then pull out turn signal lens (1).



IH23K1920024-02

- 2) Remove turn signal bulb holder screw (1).

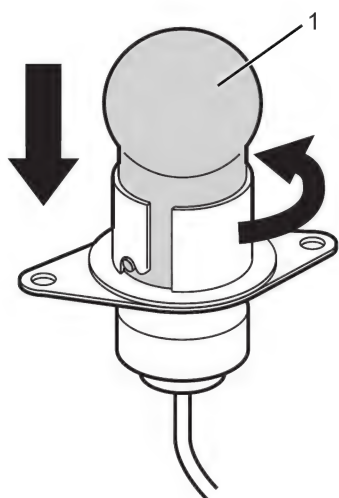


IH23K1920025-02

- 3) Push in on the bulb (1), twisting it to the left, and pull it out for replacement.



IH23K1920026-03



IH23K1920027-01

- 4) To fit replacement bulb, push it in and twist to the right while pushing.

NOTICE

Over-tightening the screws when reinstalling the lens may cause the lens to crack. Tighten the screws only until they are snug.

Turn Signal Relay Inspection

BENH23K29206013

Refer to "Electrical Components Location" in Section 0A (Page 0A-5).

NOTE

Make sure that the battery is fully charged.

Before removing the turn signal relay, check the operation of the turn signal light.

If the turn signal light does not illuminate, inspect the bulb, turn signal switch and circuit connection.

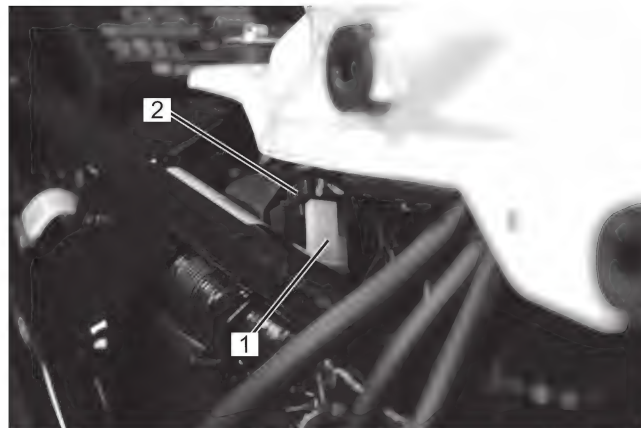
If the bulb, turn signal switch and circuit connection are OK, the turn signal relay may be faulty. In this case, replace the turn signal relay with a new one. (Page 9B-13)

Turn Signal Relay Removal and Installation

BENH23K29206014

Removal

- 1) Remove front seat. (Page 9D-20)
- 2) Remove front fairing. (Page 9D-22)
- 3) Remove frame cover. (Page 9D-30)
- 4) Remove fuel tank. (Page 1G-9)
- 5) Disconnect the coupler (1) and remove the turn signal relay (2).



IH23K1920029-02

Installation

Install the turn signal relay in the reverse order of removal. Pay attention to the following point:

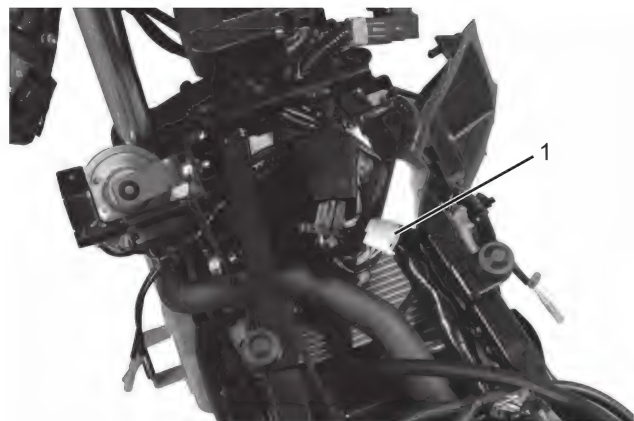
- Install the starter relay with the clamp. Refer to "Electrical Components Location" in Section 9A (Page 9A-11) "Wiring Harness Routing Diagram" in Section 9A (Page 9A-7)

Turn Signal Switch Inspection

BENH23K29206015

GSX R 150 Model





- 1) Remove front seat. (Page 9D-20)
- 2) Remove front fairing. (Page 9D-22)
- 3) Remove frame cover. (Page 9D-30)
- 4) Remove fuel tank. (Page 1G-9)
- 5) Disconnect the left handle switch coupler (1).



IH23K1920030-02

9B-14 Lighting Systems:

- 6) Inspect the turn signal switch for continuity with a circuit tester. If any abnormality is found, replace the left handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-5).

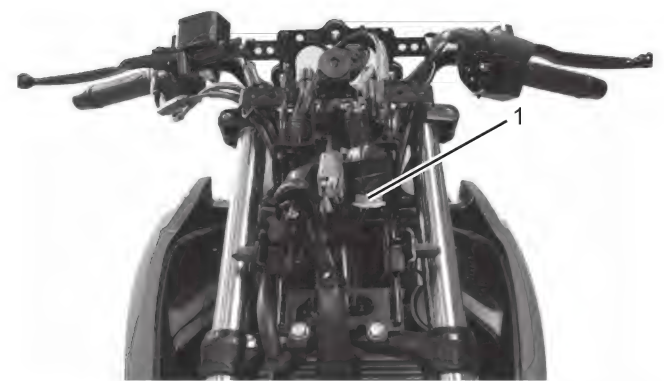
Color Position	Lg	Lbl	B
L			
PUSH			
R			

I944H1920039-01

- 7) After finishing the turn signal switch inspection, install the removed parts.





GSX S 150 Model

- 1) Remove headlight assembly. “Headlight Removal and Installation” (Page 9B-2)
2) Disconnect the left handle switch coupler (1).



IH23K2920009-03

- 3) Inspect the turn signal switch for continuity with a circuit tester. If any abnormality is found, replace the left handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-5).

Color Position	Lg	Lbl	B
L			
PUSH			
R			

I944H1920039-01

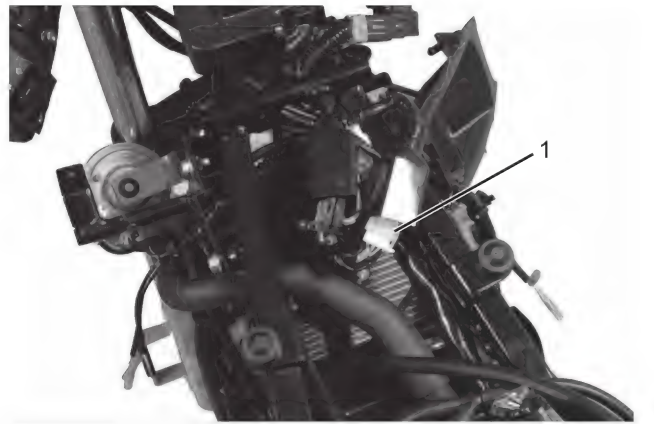
- 4) After finishing the turn signal switch inspection, install the removed parts.

Dimmer Switch Inspection

BENH23K29206016





GSX R 150 Model

- 1) Remove front seat. ⌚ (Page 9D-20)
2) Remove front fairing. ⌚ (Page 9D-22)
3) Remove fuel tank. ⌚ (Page 1G-9)
4) Disconnect the left handle switch coupler (1).



IH23K1920030-02

- 5) Inspect the dimmer switch for continuity with a circuit tester.
If any abnormality is found, replace the left handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-5).

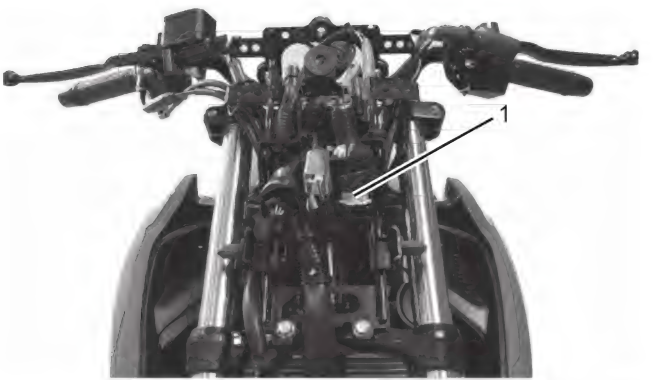
Color Position	YW	Y	W	BG
HI				
LO				

IH23K1920031-03

- 6) After finishing the dimmer switch inspection, reinstall the removed parts.

GSX S 150 Model

- 1) Remove headlight assembly. “Headlight Removal and Installation” (Page 9B-2)
2) Disconnect the left handle switch coupler (1).



IH23K2920009-03

- 3) Inspect the dimmer switch for continuity with a circuit tester.

If any abnormality is found, replace the left handle switch with a new one. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-5).

Color Position	YW	Y	W	BG
HI			○	○
LO	○	○		

IH23K1920031-03

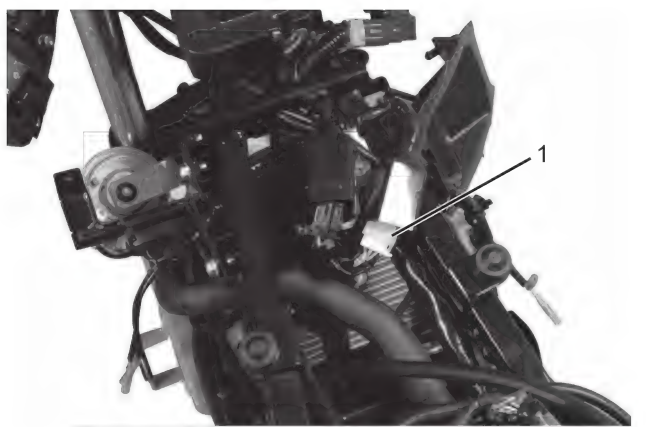
- 4) After finishing the dimmer switch inspection, reinstall the removed parts.

Passing Switch Inspection

BENH23K29206017

GSX R 150 Model

- 1) Remove front seat. (Page 9D-20)
- 2) Remove front fairing. (Page 9D-22)
- 3) Remove fuel tank. (Page 1G-9)
- 4) Disconnect the left handle switch coupler (1).



IH23K1920030-02

- 5) Inspect the passing switch for continuity with a circuit tester. If any abnormality is found, replace the left handle switch with a new one. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-5).

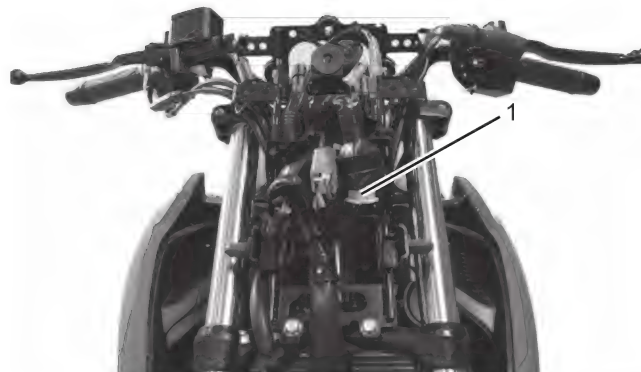
Color Position	W	BG	Y
FREE		○	○
PUSH	○	○	

IH23K1920032-02

- 6) After finishing the passing switch inspection, reinstall the removed parts.

GSX S 150 Model

- 1) Remove headlight assembly. "Headlight Removal and Installation" (Page 9B-2)
- 2) Disconnect the left handle switch coupler (1).



IH23K2920009-03

- 3) Inspect the passing switch for continuity with a circuit tester. If any abnormality is found, replace the left handle switch with a new one. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-5).

Color Position	W	BG	Y
FREE		○	○
PUSH	○	○	

IH23K1920032-02

- 4) After finishing the passing switch inspection, reinstall the removed parts.

Specifications

Tightening Torque Specifications

BENH23K29207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Headlight brace bolt	5.5	0.56	4.05	☞ (Page 9B-3)
Rear fender front screw	1.0	0.10	0.74	☞ (Page 9B-9)
Rear combination light screw	2.0	0.20	1.47	☞ (Page 9B-9)
License plate light screw	2.0	0.20	1.47	☞ (Page 9B-10)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:
“Rear Lighting System Construction” (Page 9B-5)
“Fasteners Information” in Section 0C (Page 0C-9)

Combination Meter / Fuel Meter / Horn

General Description

Combination Meter System Description

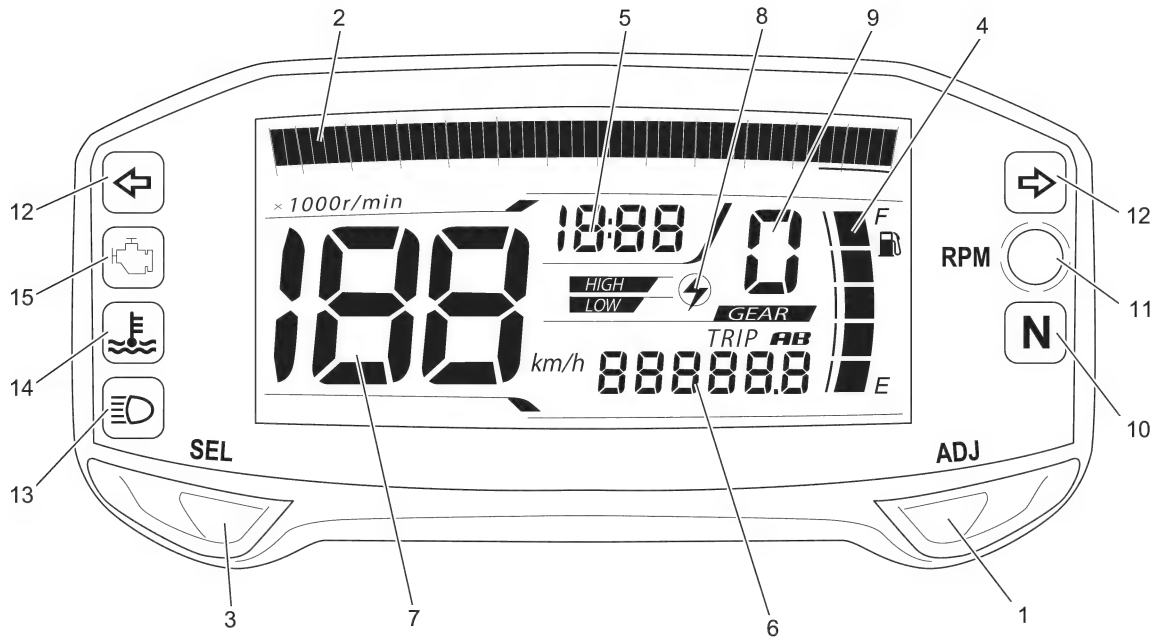
BENH23K29301001

This combination meter mainly consists of the LCD (Liquid Crystal Display) and LED (Light Emitting Diode).

The LCD indicates Fuel level indicator (4), Clock (5), Odo / Trip A / Trip B (6), Speed (7), Engine RPM indicator (8) and Gear position indicator (9) respectively.

LED is used for the illumination light and each indicator light.

LED is maintenance free. LED consumes less power and is more resistant to vibration compared to conventional light bulbs.



IG12K1930001-01

1. Adjust switch	10. LED (Neutral indicator light)	13. LED (Hi beam indicator light)
2. Tachometer	11. LED (Engine RPM indicator light)	14. LED (ECT indicator light)
3. Select switch	12. LED (Turn signal indicator light)	15. LED (MIL)

Diagnostic Information and Procedures

Combination Meter Symptom Diagnosis

BENH23K29304001

- 1) Check the combination meter power and ground circuit.

Condition	Possible cause	Correction / Reference Item
Speedometer does not operate	Faulty speed sensor	Check speed sensor. (Page 1C-11)
	Faulty speedometer	Check speedometer. (Page 9C-5)
	Faulty speed sensor circuit	Repair circuit. (Page 9A-2)
Fuel level indicator does not operate	Faulty fuel level gauge	Check fuel level gauge. (Page 9C-7)
	Faulty fuel level indicator	Check fuel level indicator. (Page 9C-5)
	Faulty fuel level gauge circuit	Repair circuit. (Page 9A-2)

Horn Symptom Diagnosis

BENH23K29304002

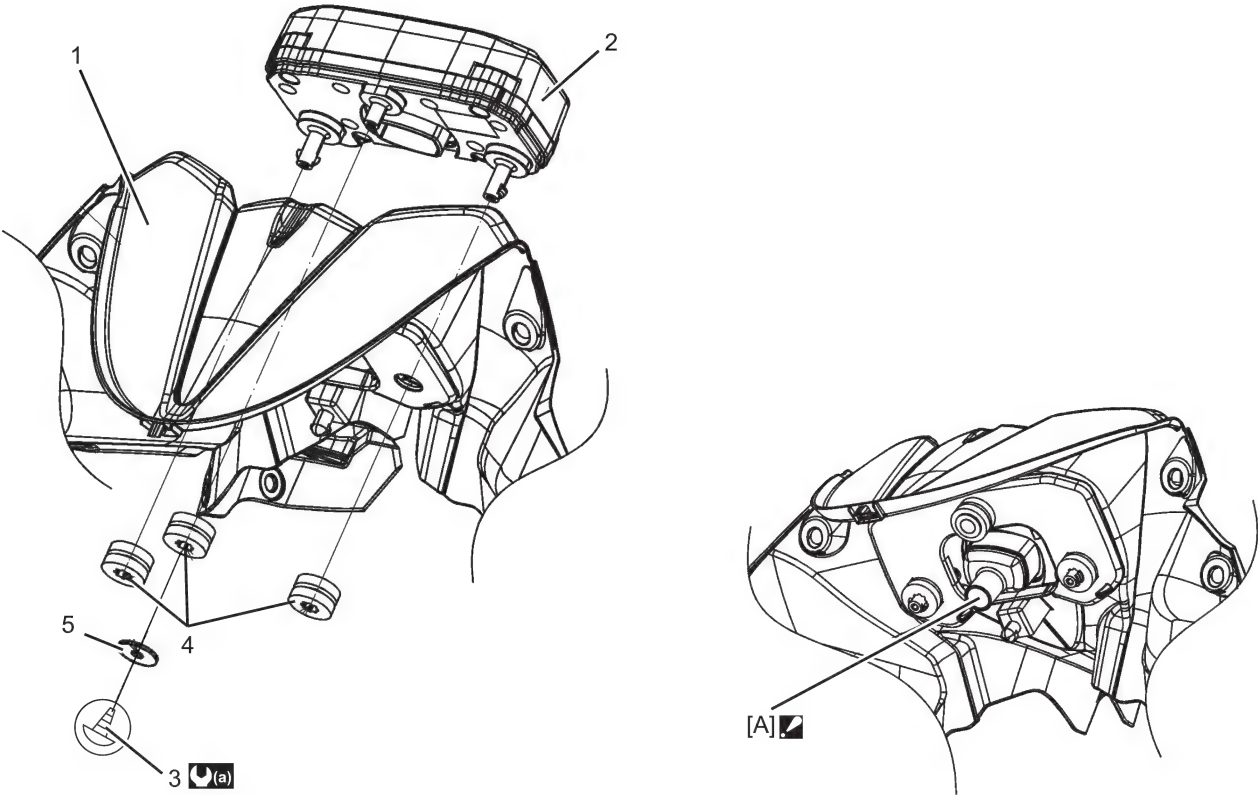
Condition	Possible cause	Correction / Reference Item
Horn does not operate	Faulty horn switch	Check horn switch. (Page 9C-7)
	Faulty wiring or ground	Repair circuit. (Page 9A-2)
	Faulty horn	Check horn. (Page 9C-7)

Repair Instructions

Combination Meter Construction

BENH23K29306001

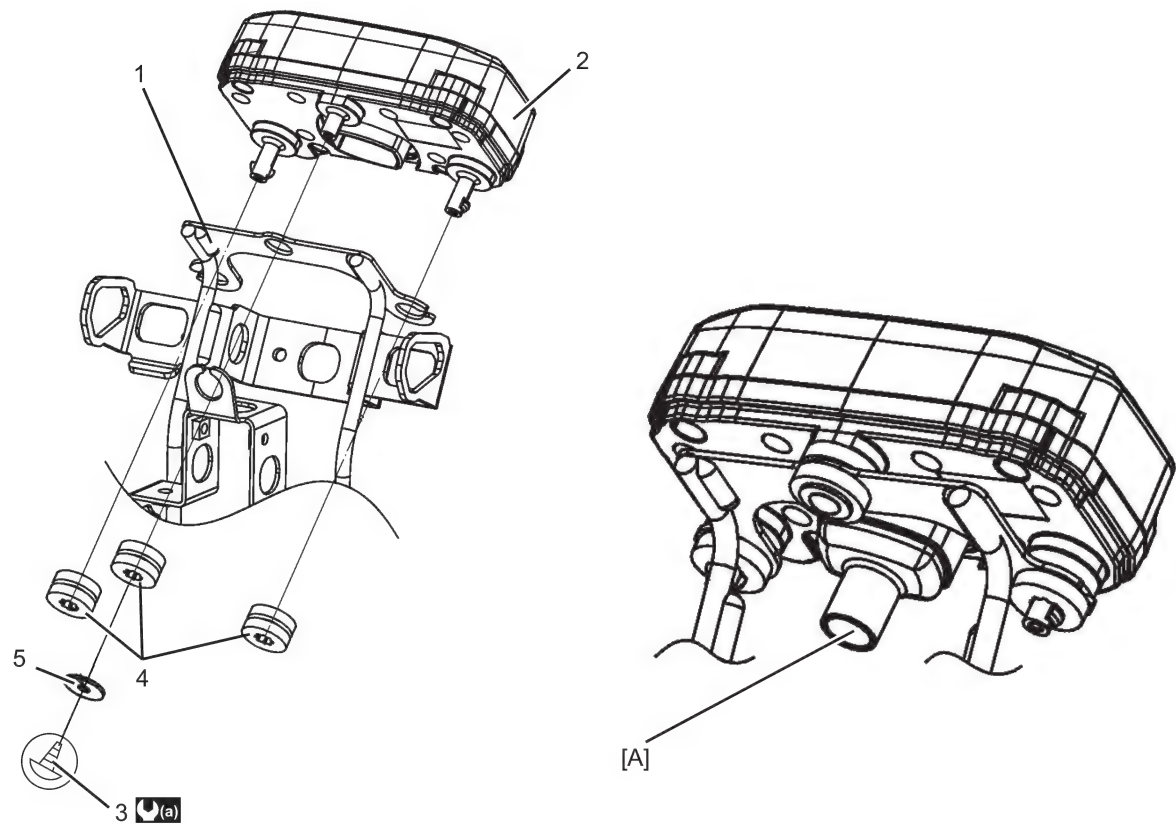
GSX R 150 Model



IH23K1930001-01

[A]: Fit the coupler boot to the speedometer until it reaches bottom of the meter case.	4. Meter cushion
1. Meter panel	5. Combination meter washer
2. Combination meter	: 1.0 N·m (0.10 kgf·m, 0.75 lbf·ft)
3. Combination meter screw	

GSX S 150 Model



IH23K2930001-02

[A]: Fit the coupler boot to the speedometer until it reaches bottom of the meter case.		4. Meter cushion
1. Headlamp housing bracket		5. Combination meter washer
2. Combination meter		[a] : 1.0 N·m (0.10 kgf-m, 0.75 lbf-ft)
3. Combination meter screw		

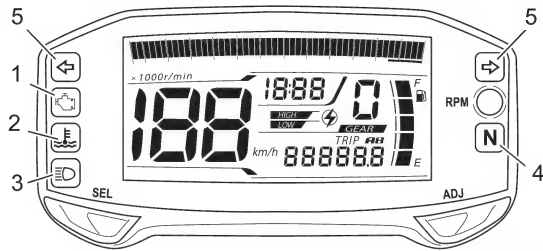
Combination Meter On-Vehicle Inspection

BENH23K29306002

Check that the LEDs (MIL (1) and ECT indicator light (2)) immediately light up when the ignition switch is turned to ON.

Check that other LEDs (Hi beam indicator light (3), Neutral indicator light (4) and Turn signal indicator lights (5)) light up/go off by operating the gearshift lever, dimmer and turn signal switches.

If abnormal condition is found, replace the combination meter unit with a new one after checking its wire harness/coupler. (Page 9C-4)



IG12K1930003-01

Combination Meter Removal and Installation

BENH23K29306003

GSX R 150 Model

- 1) Remove front fairing. (Page 9D-22)
- 2) Remove body cowl. (Page 9D-28)
- 3) Remove meter panel. (Page 9D-29)
- 4) Remove meter panel screws.



IH23K1930002-01

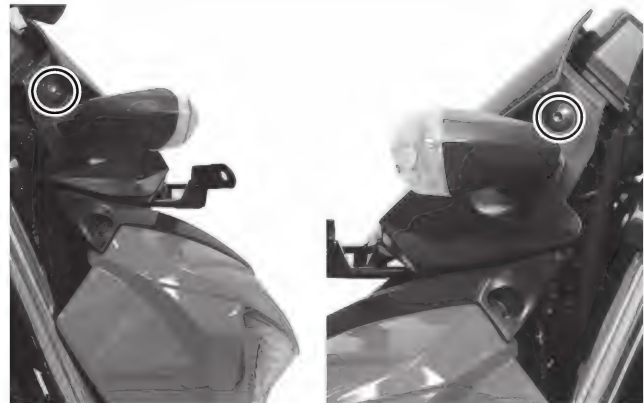
- 5) Pull up speedometer (1) for remove.



IH23K1930003-01

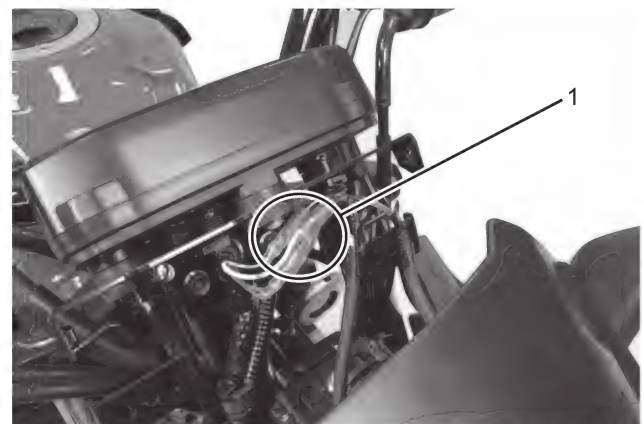
GSX S 150 Model

- 1) Remove meter cover bolt.



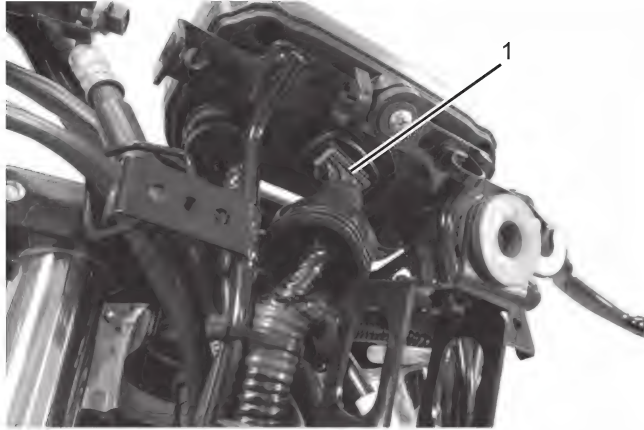
IH23K2920006-01

- 2) Remove front turn signal couplers (1) and remove meter cover.



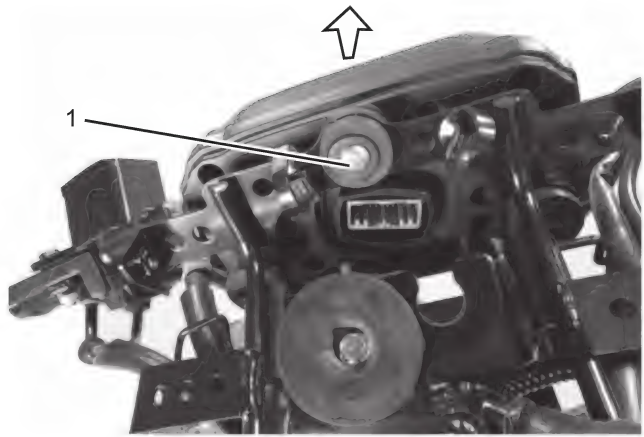
IH23K2920005-02

3) Remove combination meter coupler (1).



IH23K2930002-01

4) Remove combination meter screw (1) and then pull up combination meter (2) for remove.



IH23K2930003-01

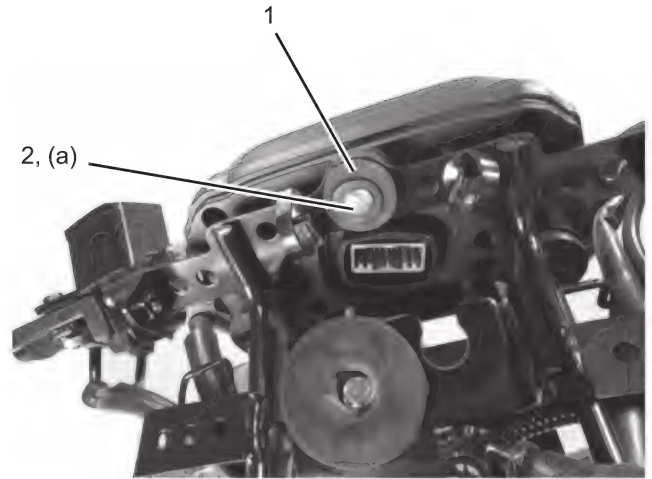
Installation

Installation is in the reverse order of removal. Pay attention to the following point:

- Check that combination meter cushion are installed correctly (1).
- Tighten the combination meter screw (2) to the specified torque.

Tightening torque

Combination meter screw (a): 1.0 N·m (0.10 kgf-m, 0.75 lbf-ft)



IH23K2930004-01

Speedometer On-Vehicle Inspection

BENH23K29306004

If the speedometer, odometer or tripmeter does not function properly, inspect the speed sensor and coupler connections. If the speed sensor and coupler connections are OK, replace the combination meter unit with a new one. (Page 9C-4)

Fuel Level Indicator Inspection

BENH23K29306005

GSX R 150 Model

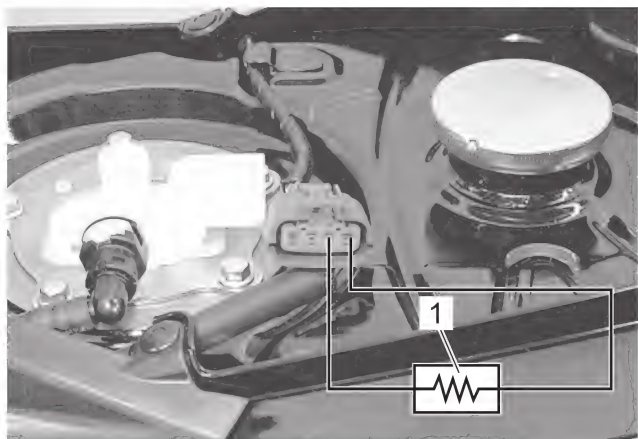
- 1) Remove front seat. (Page 9D-20)
- 2) Remove front fairing. (Page 9D-22)
- 3) Remove frame cover. (Page 9D-30)
- 4) Remove fuel tank. (Page 1G-9)
- 5) Disconnect fuel level gauge coupler (1).



IH23K1930005-02

9C-6 Combination Meter / Fuel Meter / Horn:

- 6) Connect a variable resistor (1) between the Y/B and B/W lead wires from the wire harness side.



IH23K1930006-01

- 7) Turn the ignition switch ON.
- 8) Check the display of fuel level indicator (LCD) referring to the following table.
If any defect is found, replace the combination meter with a new one. (Page 9C-4)

NOTE

It takes approx. 40 seconds for the fuel level indicator to indicate the fuel level.

Resistance	Fuel level indicator
176.0 – 204.0 Ω	
130.5 – 149.5 Ω	
92.5 – 107.5 Ω	
54.5 – 65.5 Ω	
21.0 – 29.0 Ω	

IG12K1930007-01

- 9) After finishing the fuel level indicator inspection, reinstall the removed parts.

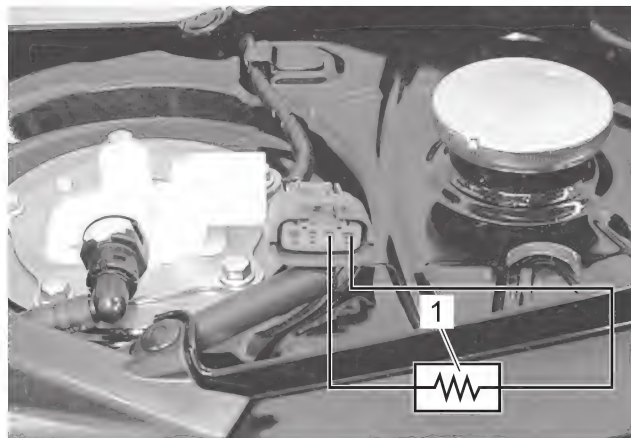
GSX S 150 Model

- 1) Remove front seat. (Page 9D-20)
- 2) Remove fuel tank side cover. "Fuel Tank Side Cover Assembly Removal and Installation" in Section 9D (Page 9D-23)
- 3) Remove frame cover. (Page 9D-30)
- 4) Remove fuel tank. (Page 1G-9)
- 5) Disconnect fuel level gauge coupler (1).



IH23K1930005-02

- 6) Connect a variable resistor (1) between the Y/B and B/W lead wires from the wire harness side.

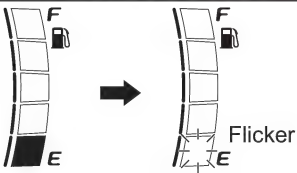
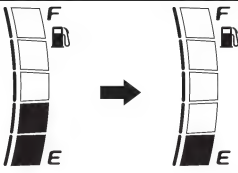
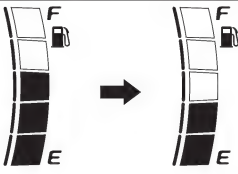
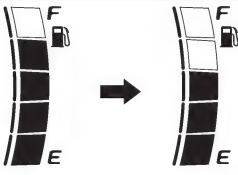
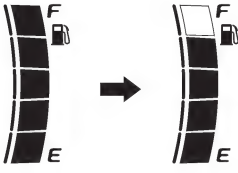


IH23K1930006-01

- 7) Turn the ignition switch ON.
- 8) Check the display of fuel level indicator (LCD) referring to the following table.
If any defect is found, replace the combination meter with a new one. (Page 9C-4)

NOTE

It takes approx. 40 seconds for the fuel level indicator to indicate the fuel level.

Resistance	Fuel level indicator
176.0 – 204.0 Ω	
130.5 – 149.5 Ω	
92.5 – 107.5 Ω	
54.5 – 65.5 Ω	
21.0 – 29.0 Ω	

IG12K1930007-01

9) After finishing the fuel level indicator inspection, reinstall the removed parts.

Fuel Level Gauge Inspection

BENH23K29306006

Refer to “Fuel Level Gauge Inspection” in Section 1G (Page 1G-14).

ECT Sensor Removal and Installation

BENH23K29306007

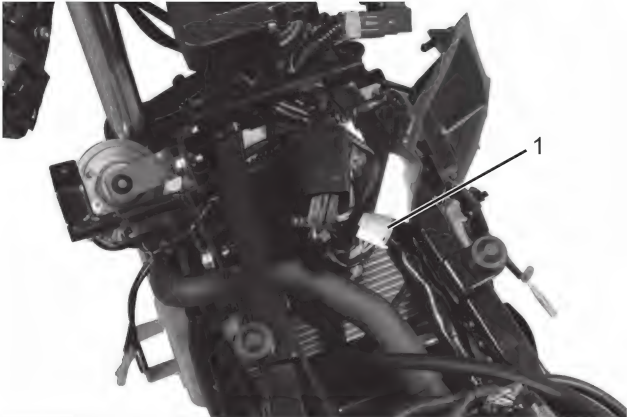
Refer to “ECT Sensor Removal and Installation” in Section 1C (Page 1C-7).

Horn Inspection

BENH23K29306008



Model Horn Switch Inspection
GSX R 150 Model

- 1) Remove front seat. (Page 9D-20)
- 2) Remove front fairing. (Page 9D-22)
- 3) Remove frame cover. (Page 9D-30)
- 4) Remove fuel tank. (Page 1G-9)
- 5) Disconnect the left handle switch lead wire coupler (1).



IH23K1920030-02

- 6) Inspect the horn switch for continuity with a circuit tester.
If any defect is found, replace the left handle switch with a new one.

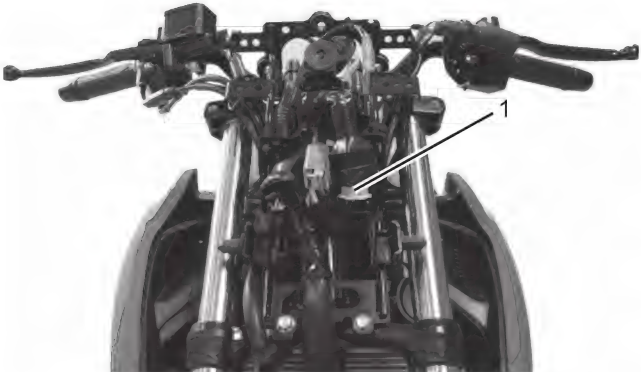
Color	BL	BW
Position		
•		
PUSH		

IH23K1930008-01

- 7) After finishing the horn switch inspection, reinstall the removed parts.



GSX S 150 Model

- 1) Remove meter cover. “Combination Meter Removal and Installation” (Page 9C-4)
- 2) Remove headlight assembly. “Headlight Removal and Installation” in Section 9B (Page 9B-2)
- 3) Disconnect the left handle switch lead wire coupler (1).



IH23K2920009-03

- 4) Inspect the horn switch for continuity with a circuit tester.
If any defect is found, replace the left handle switch with a new one.

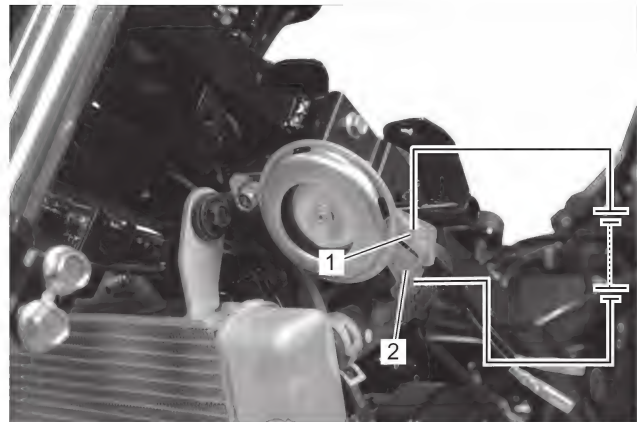
Color Position	BL	BW
•		
PUSH		

IH23K1930008-01

- 5) After finishing the horn switch inspection, reinstall the removed parts.

Horn Inspection

- 1) Disconnect the horn couplers. Refer to “Horn Removal and Installation” (Page 9C-8).
- 2) Connect a 12 V battery to terminal (1) and terminal (2). If the sound is not heard from the horn, replace the horn with a new one.



IH23K1930009-02

Horn Removal and Installation

BENH23K29306009

Removal

GSX R 150 Model

- 1) Remove front fairing. (Page 9D-22)
- 2) Disconnect the horn couplers (1).
- 3) Remove the horn (2).



IH23K1930007-01

GSX S 150 Model

- 1) Remove fuel tank side cover. “Fuel Tank Side Cover Assembly Removal and Installation” in Section 9D (Page 9D-23)
- 2) Disconnect the horn couplers (1).
- 3) Remove the horn (2).



IH23K1930007-01

Installation

Install the horn in the reverse order of removal.

Specifications

Tightening Torque Specifications

BENH23K29307001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Combination meter screw	1.0	0.10	0.75	☞ (Page 9C-5)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Combination Meter Construction” (Page 9C-2)

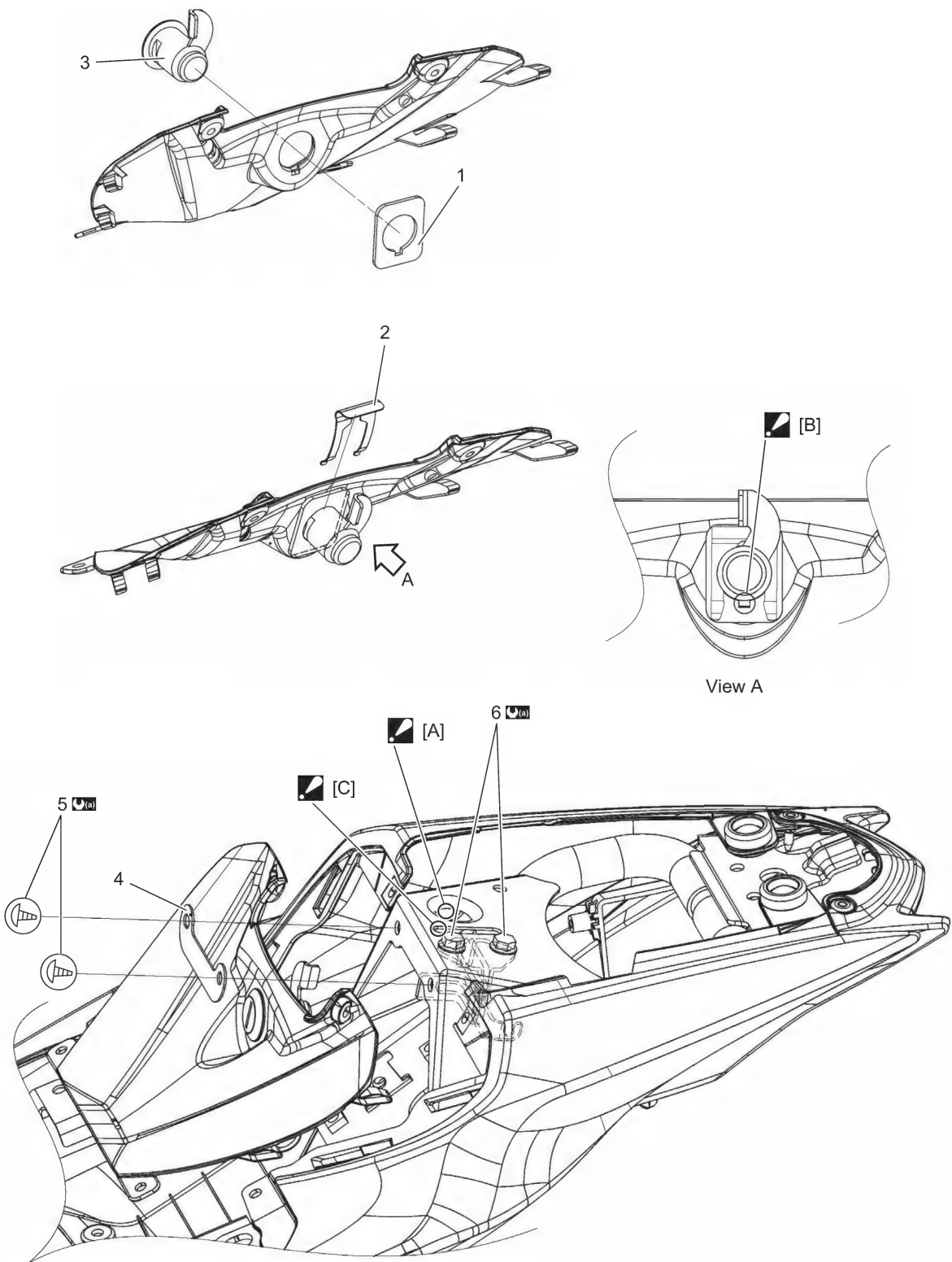
“Fasteners Information” in Section 0C (Page 0C-9)

Exterior Parts





Repair Instructions

Seat Lock Construction

BENH23K29406001



IH23K1940001-02

 [A]: Insert the protrusion of the seat lock guide into the hole of the frame.	2. Seat lock plate no.2	6. Bolt
 [B]: Align the rib of seat lock and groove of each part.	3. Seat lock assembly	 : 7.0 N·m (0.90 kgf-m, 6.50 lbf-ft)
 [C]: Align the hole of the frame and the slit of the seat lock guide.	4. Seat lock guard	
1. Seat lock plate no.1	5. Screw	

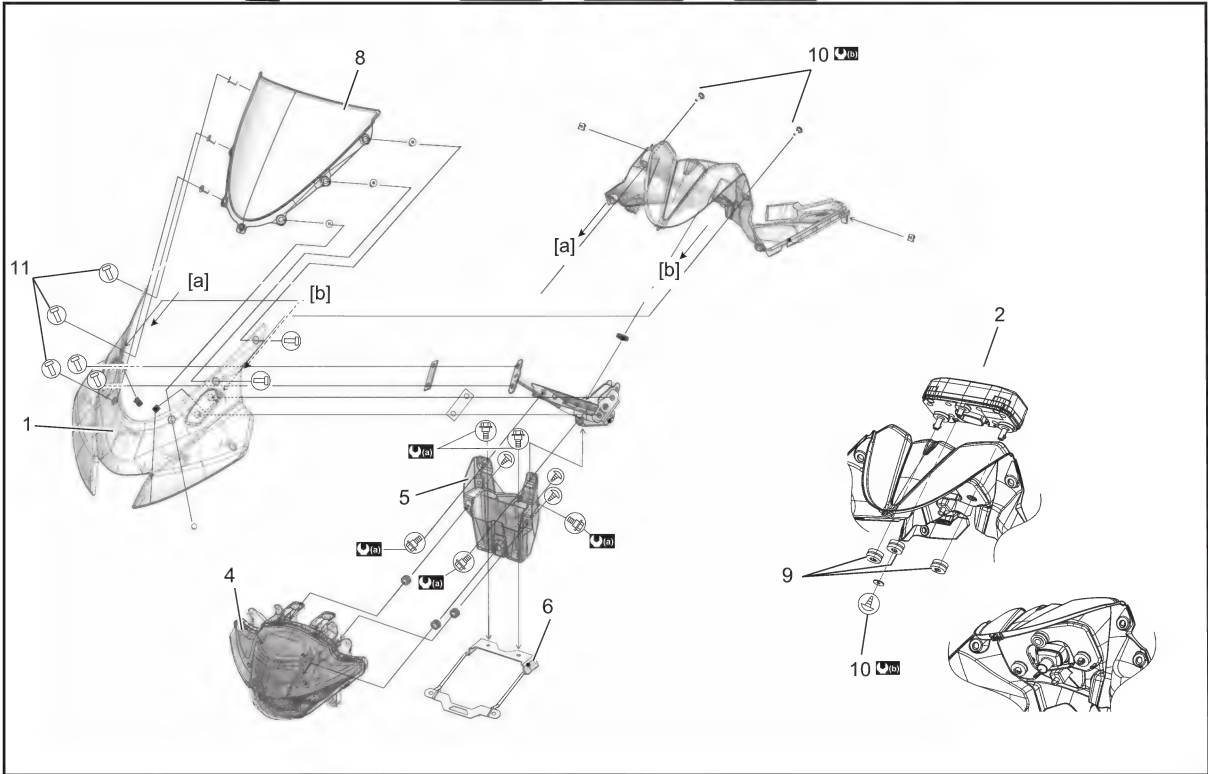
Headlight Housing Construction

BENH23K29406002

GSX R 150 Model

NOTE

Symbols such as [a] – [a] indicate a connection between 2 points.



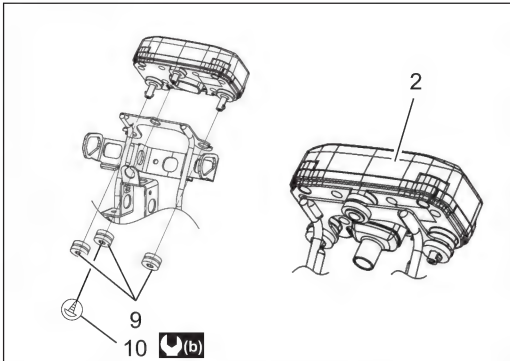
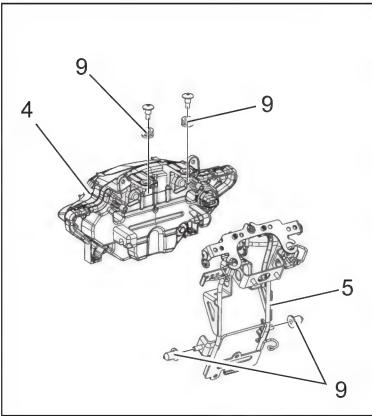
IH23K1940002-04

1. Body cowling	6. Front license bracket	11. Screw
2. Combination meter	7. Rear view mirror	[a] : 7.0 N·m (0.71 kgf-m, 5.16 lbf-ft)
3. Meter panel	8. Windscreen	[b] : 3.0 N·m (0.31 kgf-m, 2.21 lbf-ft)
4. Headlight	9. Cushion	
5. Cowling lower brace	10. Screw	




GSX S 150 Model

NOTE

Symbols such as [a] – [a] indicate a connection between 2 points.



IH23K2940001-03

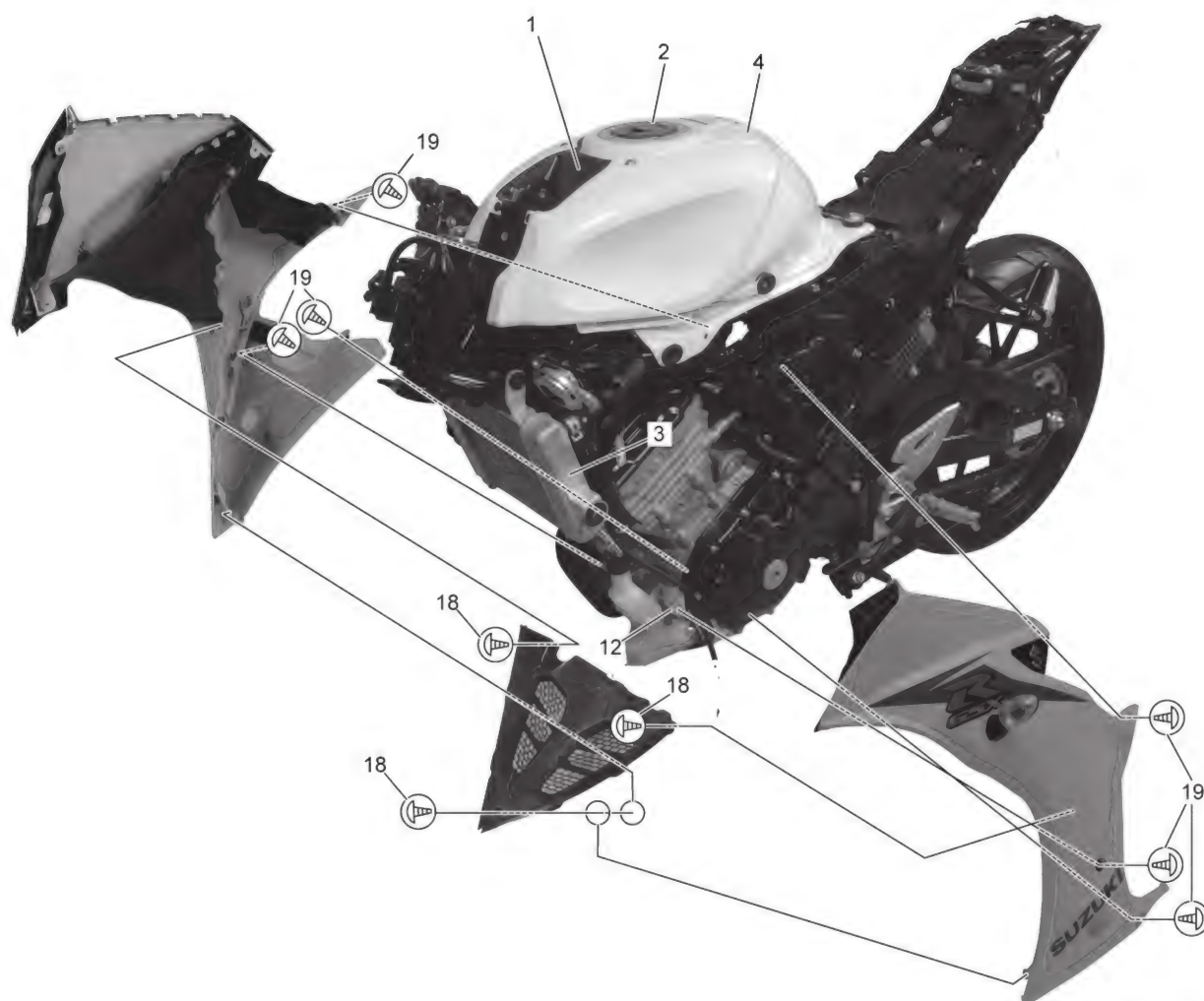
1. Headlight housing	6. Front license bracket	11. Bolt
2. Combination meter	7. Front turn signal light	 (a) : 7.0 N·m (0.71 kgf-m, 5.16 lbf-ft)
3. Handlebar	8. Cover meter	 (b) : 3.0 N·m (0.31 kgf-m, 2.21 lbf-ft)
4. Headlight	9. Cushion	 (c) : 4.0 N·m (0.40 kgf-m, 2.95 lbf-ft)
5. Headlight housing brace	10. Screw	

Front Fairing Construction (GSX R 150 Model)

BENH23K29406003

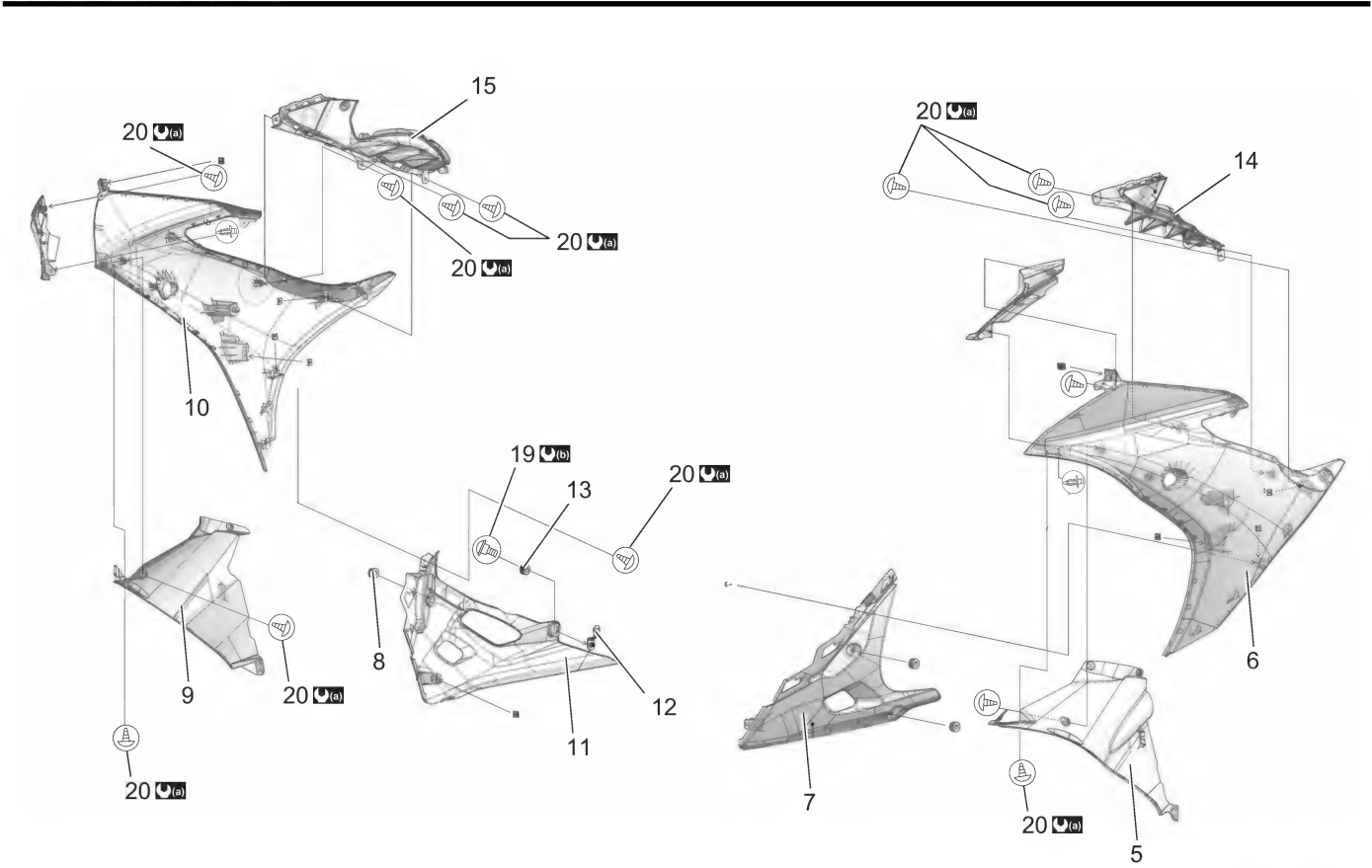
NOTE

Symbols such as [a] – [a] indicate a connection between 2 points.



IH23K1940003-02

9D-7 Exterior Parts:



IH23K1940004-01

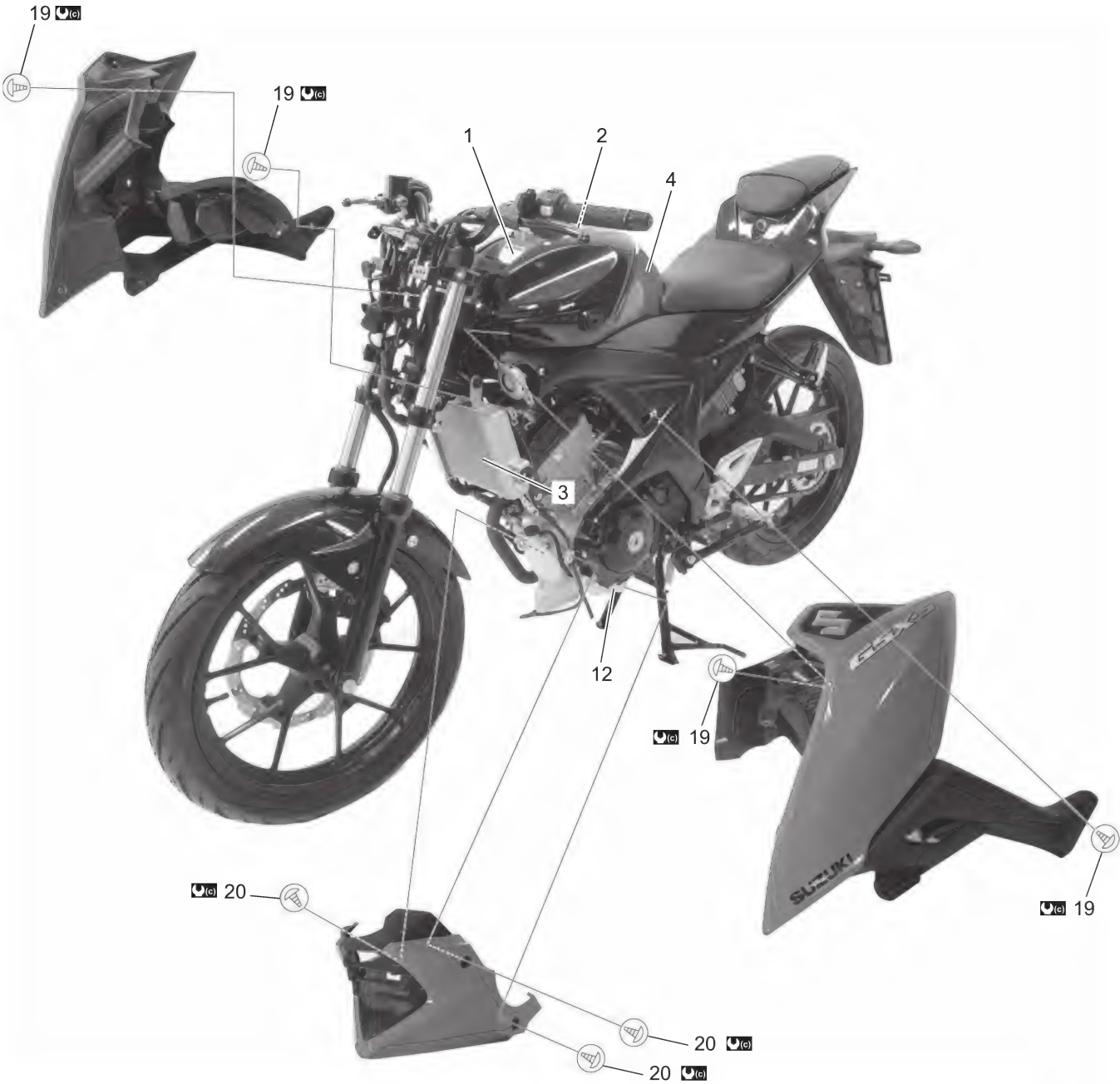
1. Fuel tank center cover	9. Right inner cowling	17. Clip
2. Fuel tank lid	10. Right side upper cowling	18. Screw
3. Radiator	11. Right side lower cowling	19. Screw
4. Fuel tank	12. Fairing brace	20. Screw
5. Left inner cowling	13. Fairing brace cushion	21. Bolt
6. Left side upper cowling	14. Right side middle cowling	(a) : 1.0 N·m (0.10 kgf-m, 0.74 lbf-ft)
7. Left side lower cowling	15. Left side middle cowling	(b) : 6.7 N·m (0.68 kgf-m, 4.94 lbf-ft)
8. Fairing cushion	16. Lower center cowling	

Fuel Tank Side Cover and Under Cowling Construction

BENH23K29406024

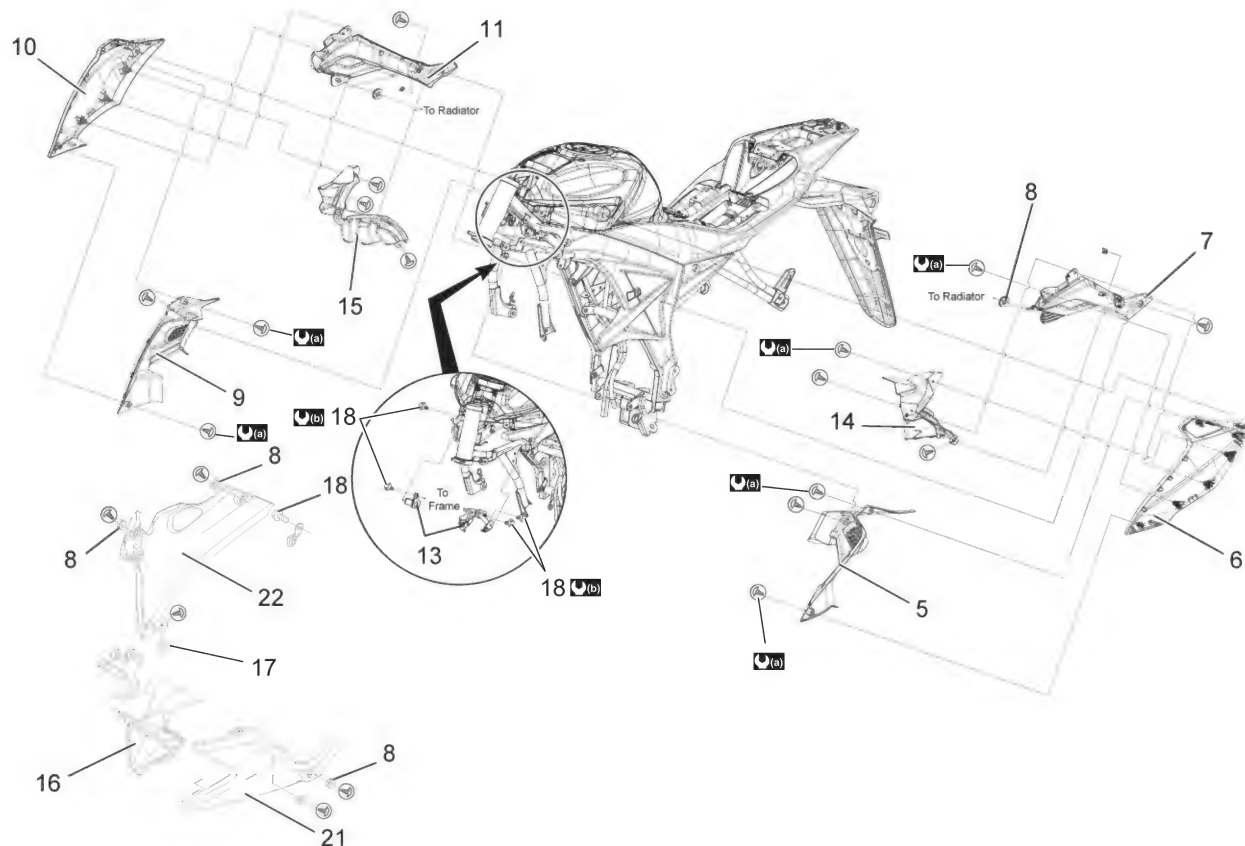
NOTE

Symbols such as [a] - [a] indicate a connection between 2 points.



IH23K2940002-01

9D-9 Exterior Parts:

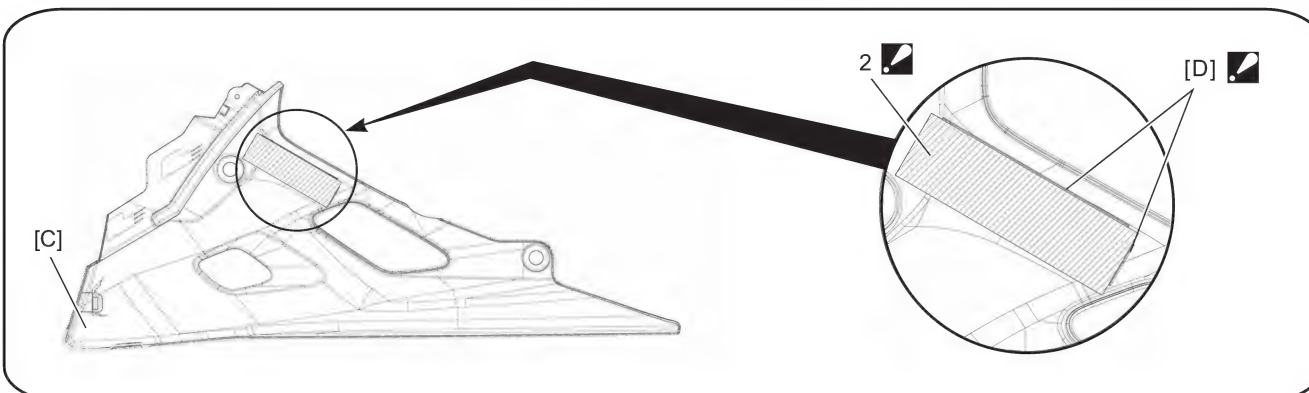
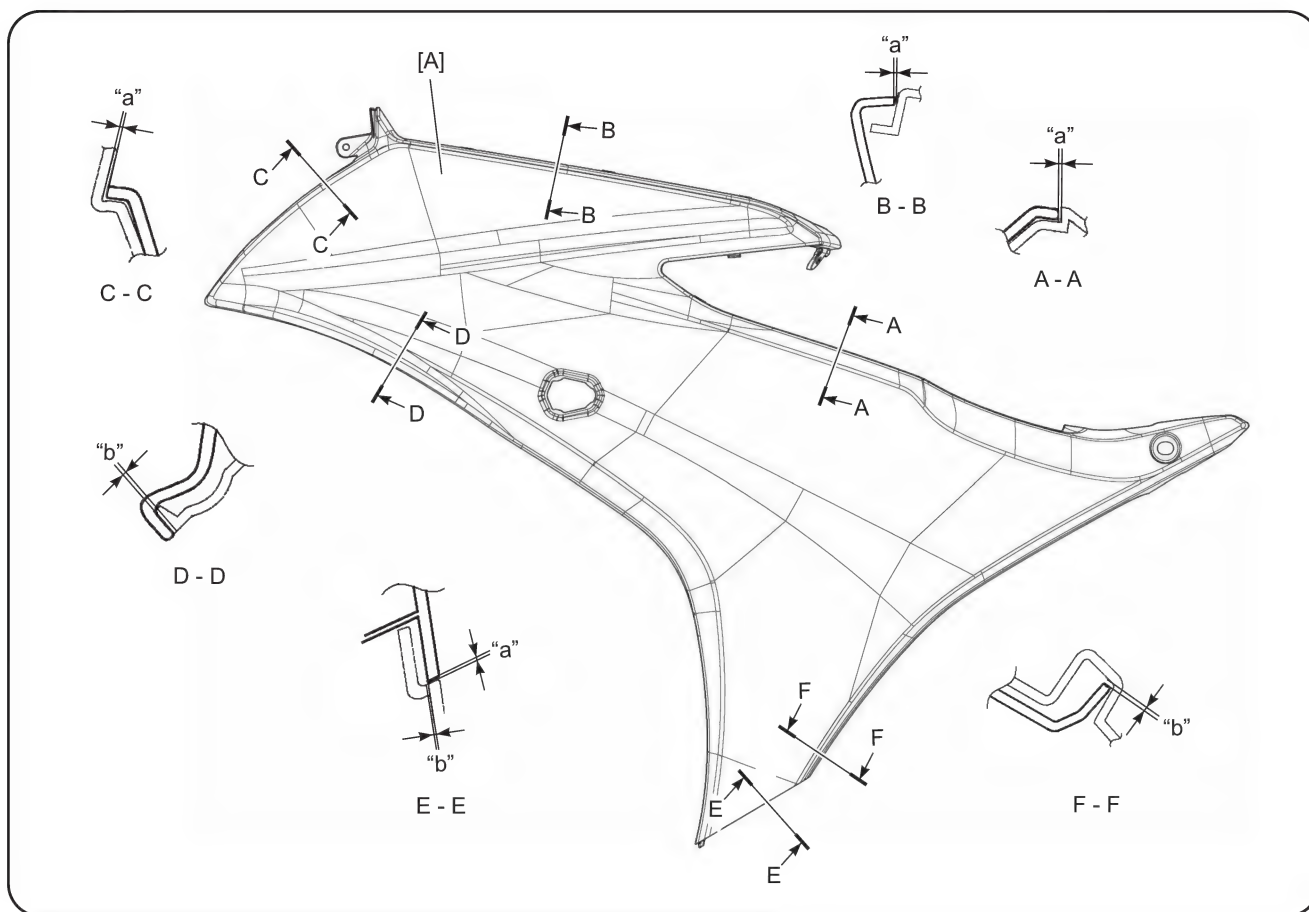
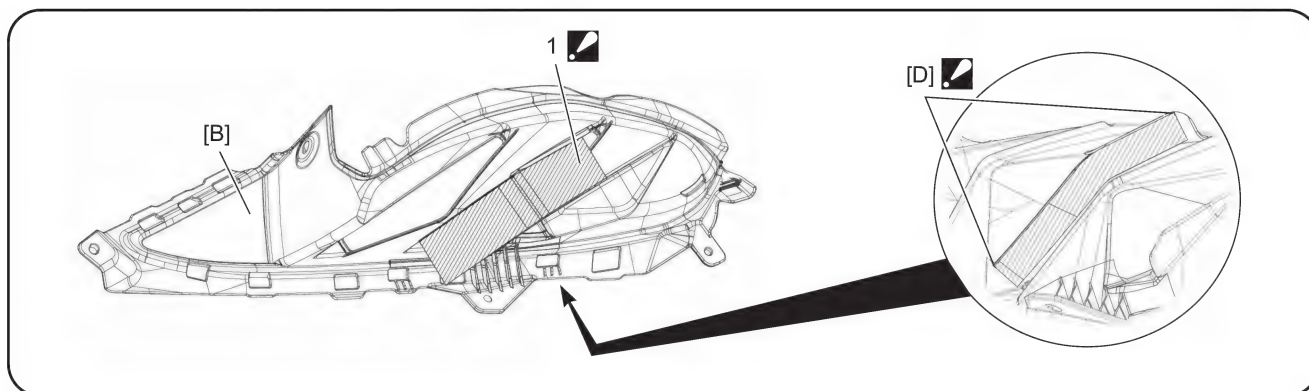


IH23K2940003-02




1. Fuel tank center cover	10. Right side frame front cover	19. Screw fuel tank side cover
2. Fuel tank lid	11. Right side frame front lower cover	20. Screw under cowling
3. Radiator	12. Under cowling brace	21. Left side under cowling
4. Fuel tank	13. Frame cover bracket	22. Right side under cowling
5. Left side frame front inner cover	14. Left side frame front middle cover	(a) : 2.0 N-m (0.20 kgf-m, 1.47 lbf-ft)
6. Left side frame front cover	15. Right side frame front middle cover	(b) : 8.0 N-m (0.81 kgf-m, 5.90 lbf-ft)
7. Left side frame front lower cover	16. Under center cowling	(c) : 4.0 N-m (0.40 kgf-m, 2.95 lbf-ft)
8. Cushion	17. Fastener	
9. Right side frame front inner cover	18. Bolt	

Front Fairing Cushion Construction

BENH23K29406004



9D-11 Exterior Parts:

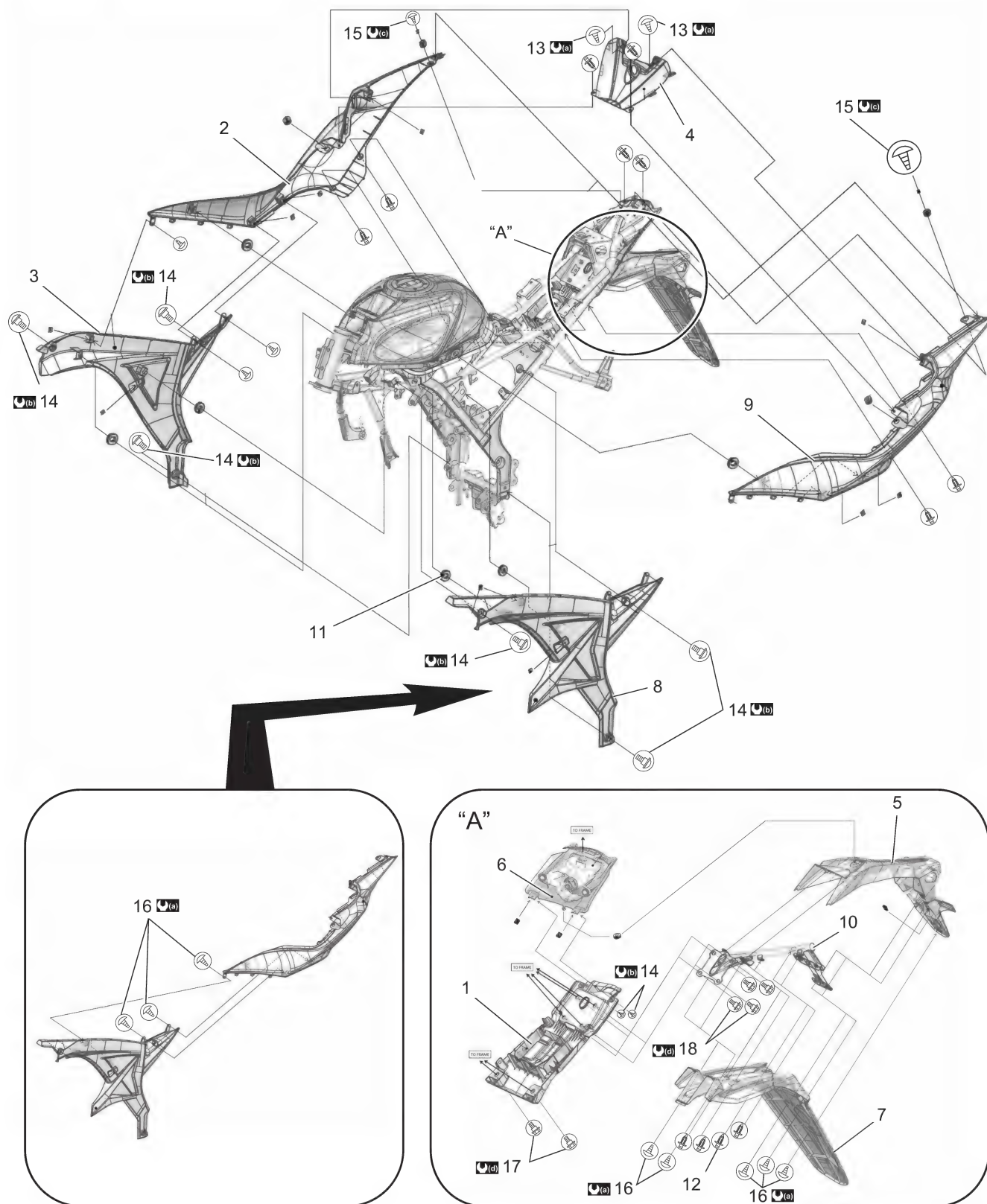
[A]: Left side upper cowling	 1. Middle cowling cushion : Before sticking the heat shield, remove oil, dust and paint residue from the sticking surface. Press the cushion after sticking.
[B]: Right side middle cowling	 2. Lower cowling cushion : Before sticking the heat shield, remove oil, dust and paint residue from the sticking surface. Press the cushion after sticking.
[C]: Left side lower cowling	"a": 0.5 mm (0.39 in)
 D]: Adhere cushion along the mark off	"b": 1.0 mm (0.12 in)

Frame Cover and Rear Fender Construction

BENH23K29406005

NOTE

Symbols such as [a] – [a] indicate a connection between 2 points.

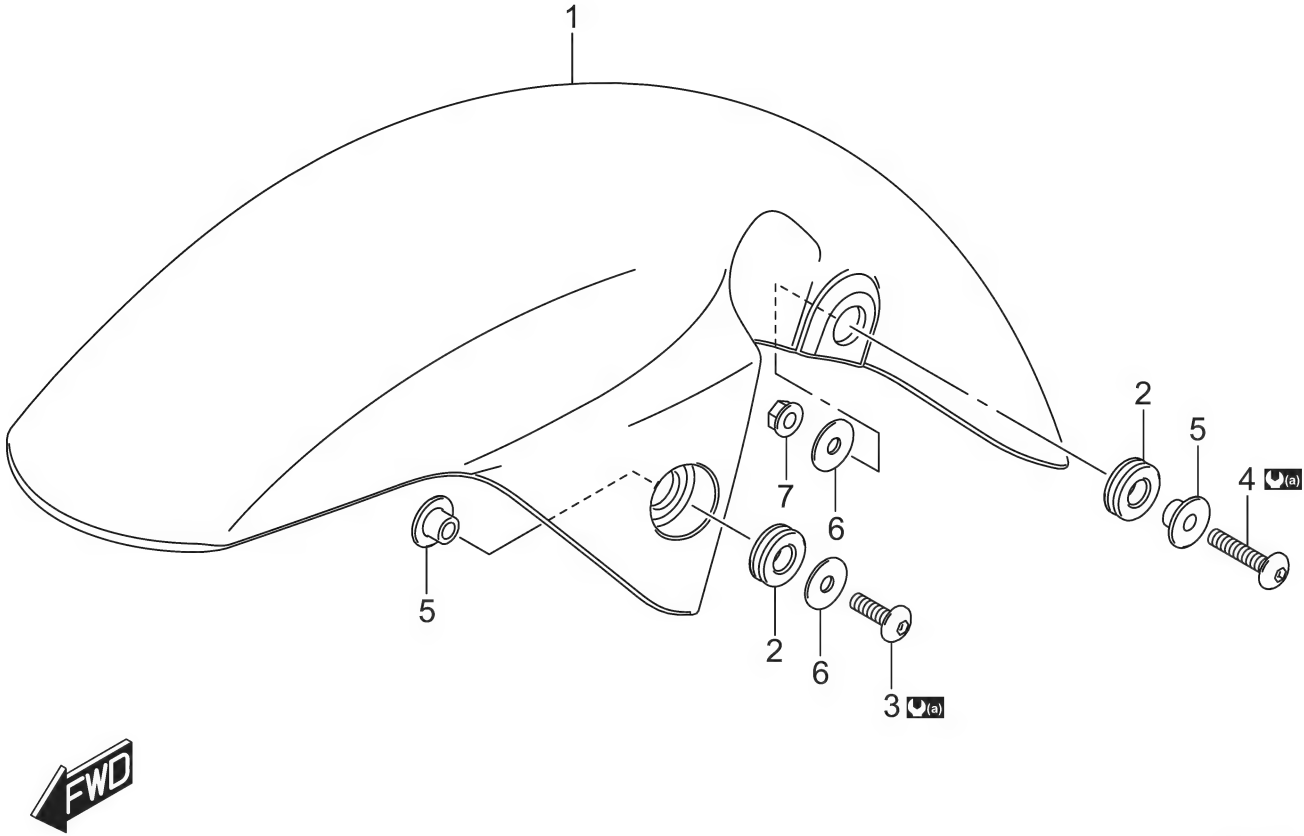


9D-13 Exterior Parts:


1. Rear fender front	10. Rear fender brace	 (a) : 1.0 N·m (0.10 kgf-m, 0.74 lbf-ft)
2. Right frame cover	11. Cushion	 (b) : 4.6 N·m (0.47 kgf-m, 3.39 lbf-ft)
3. Right frame front cover	12. Clip	 (c) : 3.0 N·m (0.30 kgf-m, 2.21 lbf-ft)
4. Frame upper center cover	13. Screw	 (d) : 6.7 N·m (0.68 kgf-m, 4.94 lbf-ft)
5. Rear fender rear	14. Screw	
6. Rear inner fender	15. Screw	
7. Rear fender extension	16. Screw	
8. Left frame front cover	17. Bolt (M6: Long)	
9. Left frame cover	18. Bolt (M6: Short)	

Front Fender Construction

BENH23K29406006



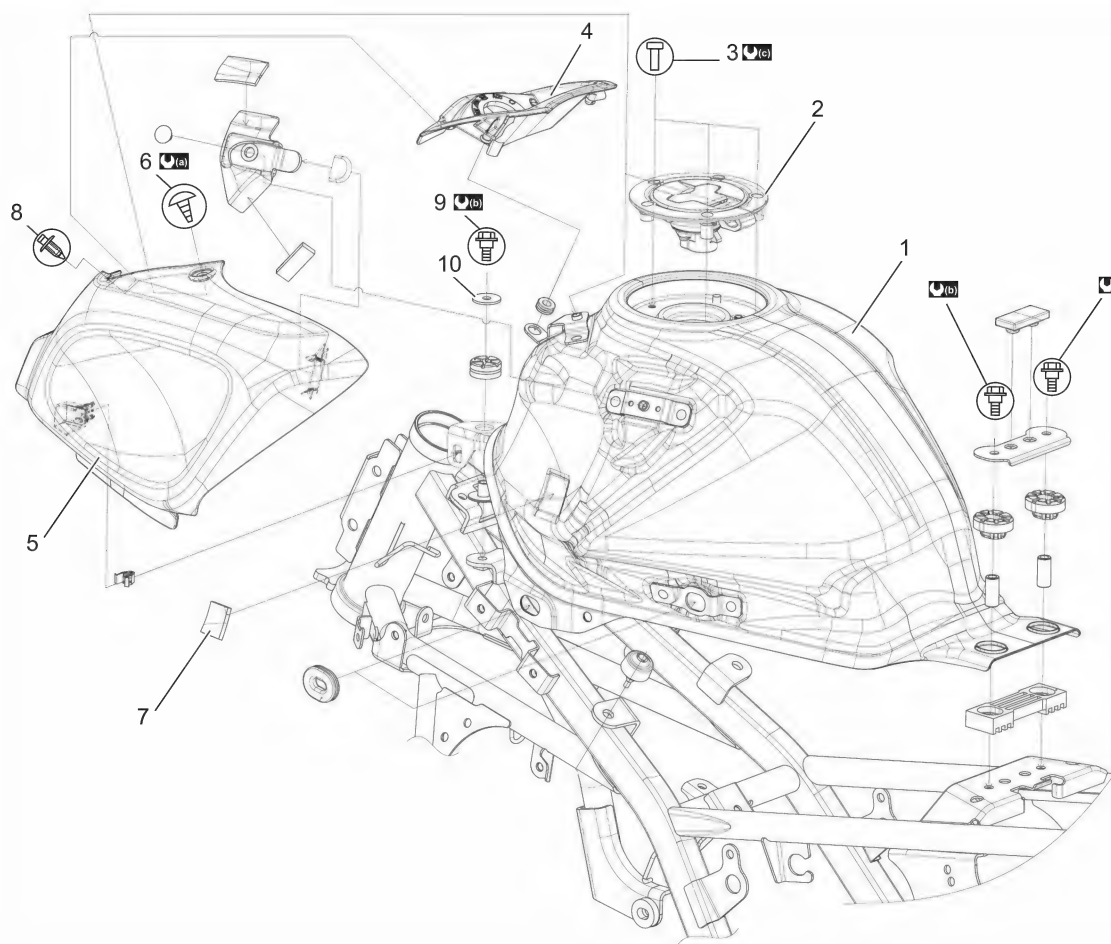
IH23K1940006-02

1. Front fender	3. Front fender front screw	5. Front fender spacer	7. Nut
2. Front fender cushion	4. Front fender rear screw	6. Front fender washer	 (a) : 6.7 N·m (0.68 kgf-m, 4.94 lbf-ft)

Fuel Tank Construction

BENH23K29406007

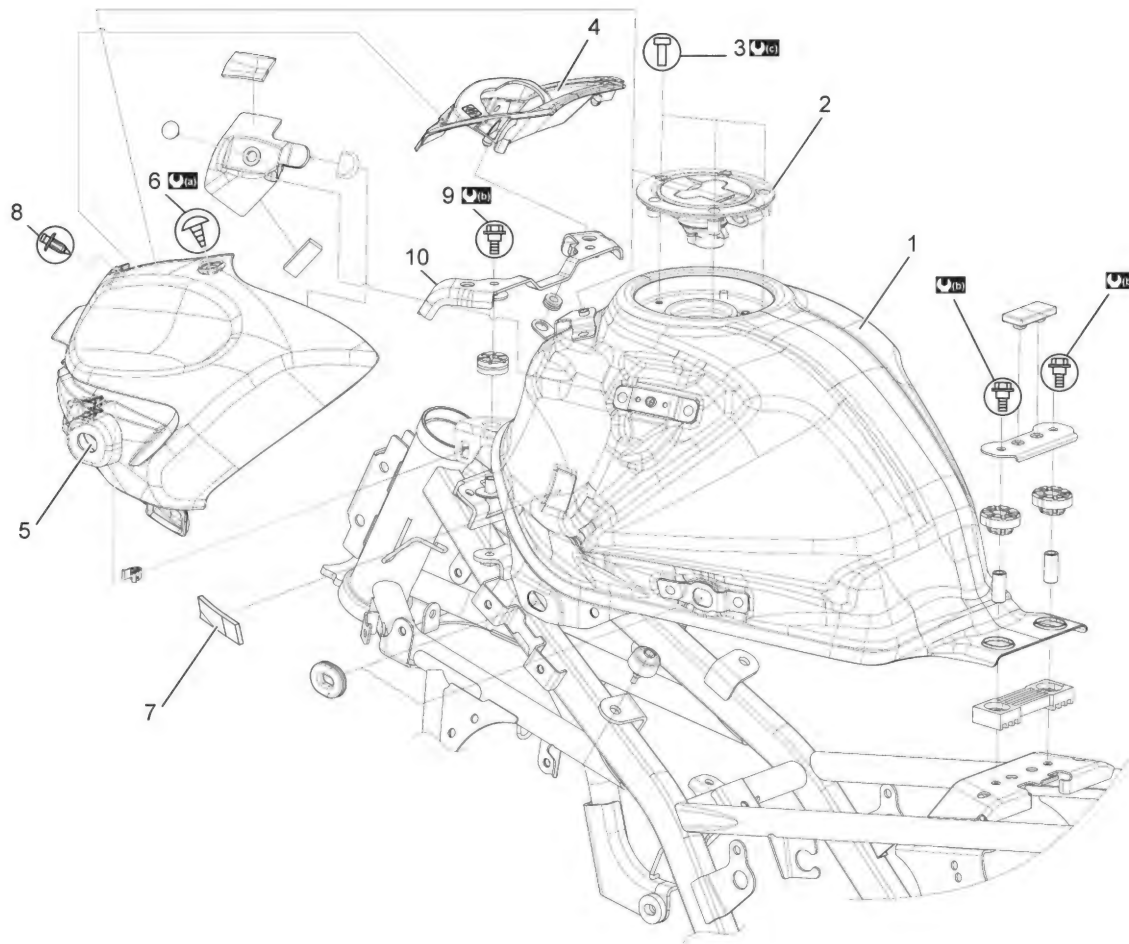
GSX R 150 Model






IH23K1940007-03

1. Fuel tank	6. Fuel tank cover screw	: 4.0 N-m (0.41 kgf-m, 2.95 lbf-ft)
2. Fuel filler cap	7. Cushion	: 8.0 N-m (0.82 kgf-m, 5.90 lbf-ft)
3. Fuel filler cap bolt	8. Clip	: 2.0 N-m (0.20 kgf-m, 1.47 lbf-ft)
4. Fuel tank center cover	9. Bolt	
5. Fuel tank cover	9. Washer	

GSX S 150 Model



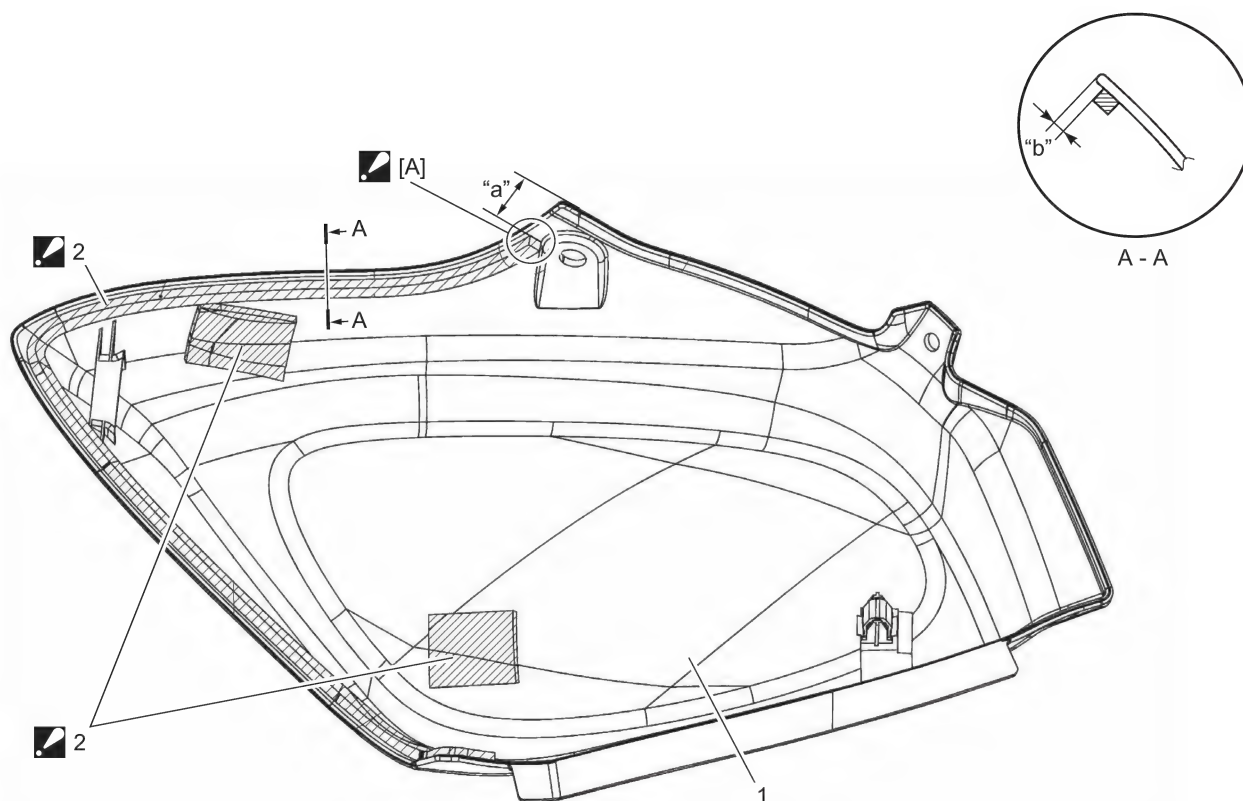
IH23K2940004-01

1. Fuel tank	6. Fuel tank cover screw	 (a) : 4.0 N·m (0.41 kgf-m, 2.95 lbf-ft)
2. Fuel filler cap	7. Cushion	 (b) : 8.0 N·m (0.82 kgf-m, 5.90 lbf-ft)
3. Fuel filler cap bolt	8. Clip	 (c) : 2.0 N·m (0.20 kgf-m, 1.47 lbf-ft)
4. Fuel tank center cover	9. Bolt	
5. Fuel tank cover	10. Frame front inner cover bracket	

Fuel Tank Cover Cushion Construction

GSX R 150 Model

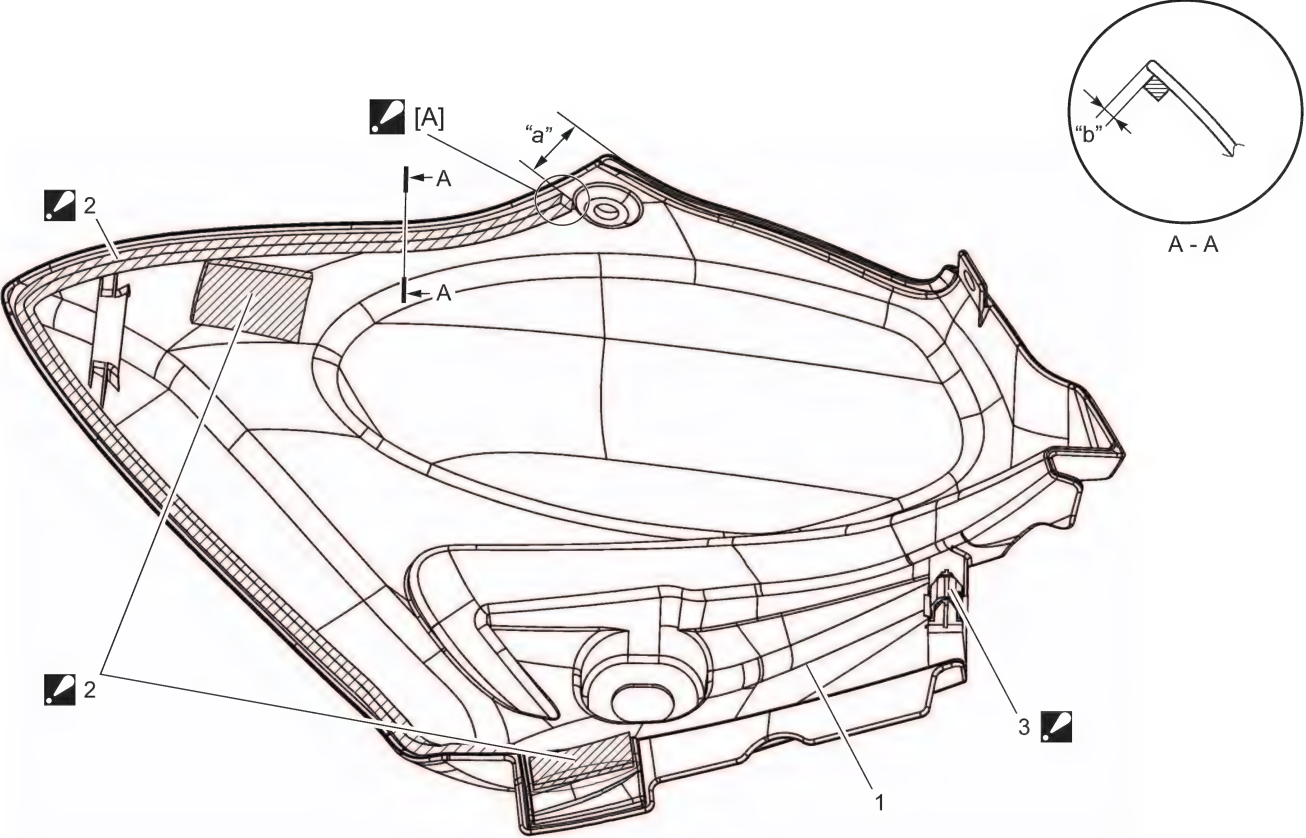
BENH23K29406008







IH23K1940008-02

<p>■ [A]: Start to stick cushion from this position</p>	<p>■ 3. Fuel tank fastener : Stick on cover match with mark off line</p>
<p>■ [B]: Stick on cover match with mark off line</p>	<p>"a": 24 mm (0 – 0.157 in)</p>
<p>1. Fuel tank cover</p>	<p>"b": 3 mm (–0.118 – 0.039 in)</p>
<p>■ 2. Fuel tank cover cushion : Before sticking the cushion, remove oil, dust and paint residue from the sticking surface. Press the cushion after sticking.</p>	

GSX S 150 Model

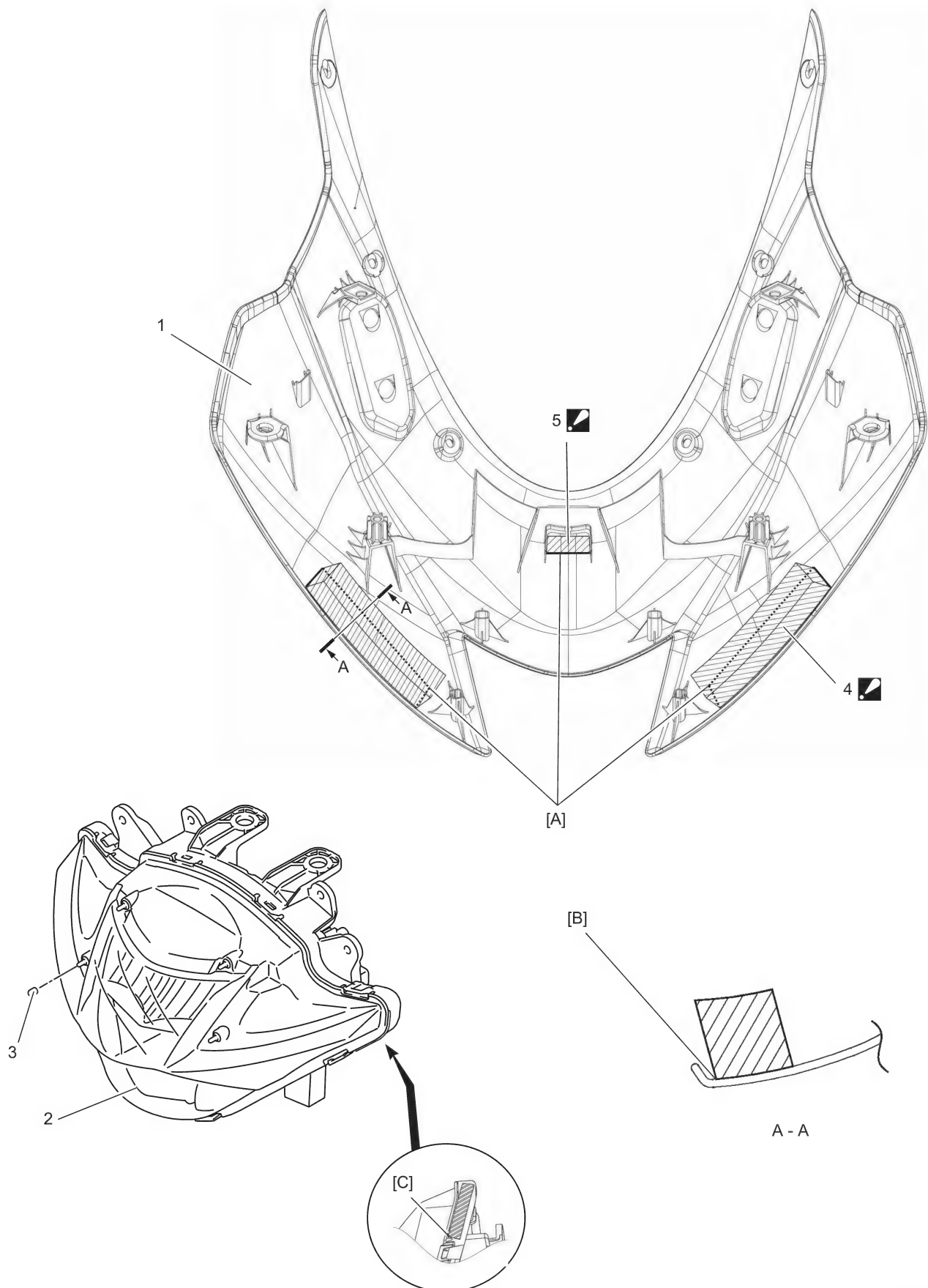


IH23K2940005-01






 [A]: Start to stick cushion from this position	 3. Fuel tank fastener : Stick on cover match with mark off line
 [B]: Stick on cover match with mark off line	"a": 24 mm (0 – 0.157 in)
1. Fuel tank cover	"b": 3 mm (–0.118 – 0.039 in)
 2. Fuel tank cover cushion : Before sticking the cushion, remove oil, dust and paint residue from the sticking surface. Press the cushion after sticking.	

Body Cowling Cushion Construction

BENH23K29406009

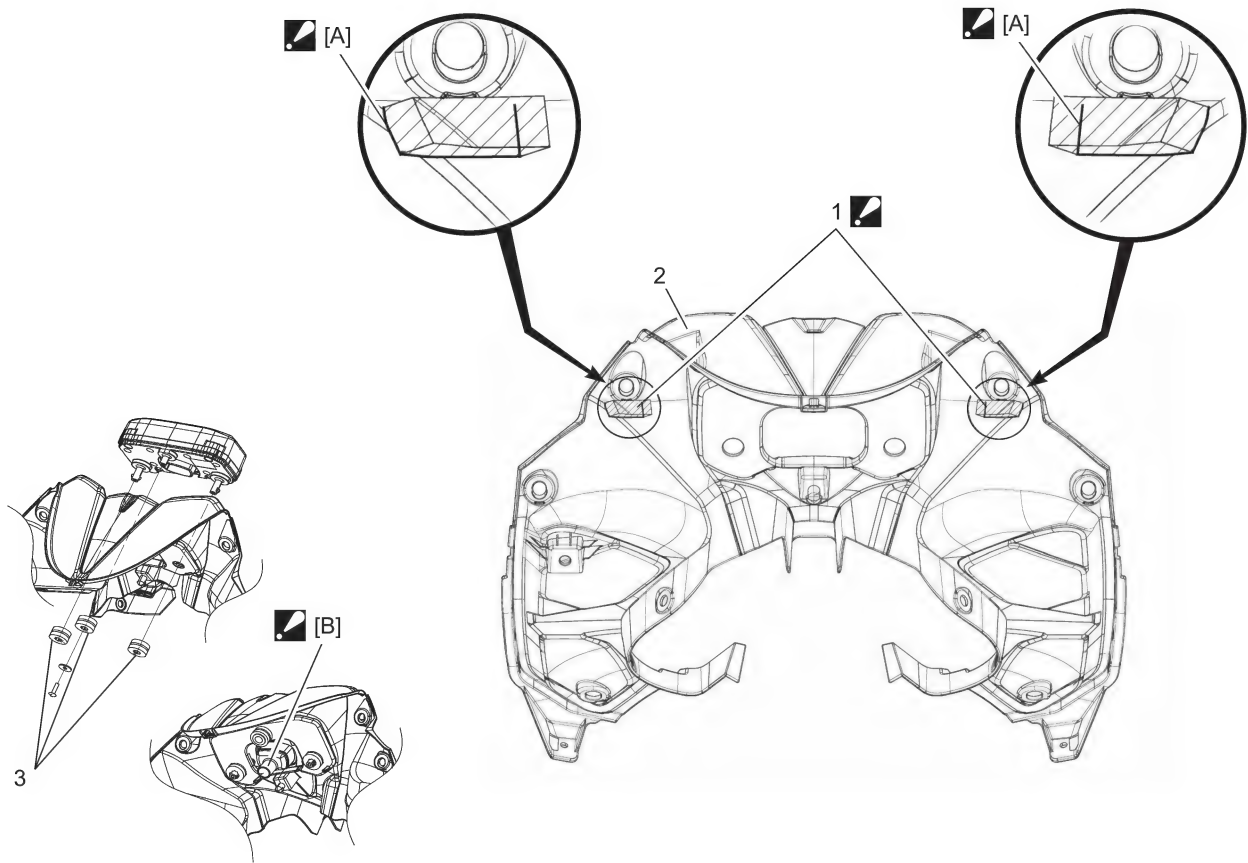


9D-19 Exterior Parts:




 [A]: Adhere cushion along the mark off	2. Headlamp
 [B]: Do not ride on R-End	3. Headlamp cover cushion
 [C]: Affix the cushion on comply with an edge setting the edge to the housing notch	 4. Body cowling cushion: Before sticking the cushion, remove oil, dust and paint residue from the sticking surface. Press the cushion after sticking.
1. Body cowling	 5. Meter panel cushion: Before sticking the cushion, remove oil, dust and paint residue from the sticking surface. Press the cushion after sticking.

Meter Panel Cushion Construction

BENH23K29406010



IH23K1940052-01

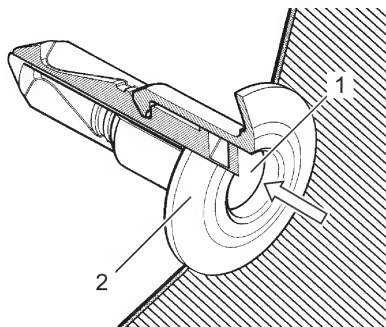
 [A]: Adhere cushion along the mark off	2. Meter panel
 [B]: Fit it until the coupler boots reaches the bottom of meter case	3. Speedometer cushion
 1: Meter panel cushion: Before sticking the cushion, remove oil, dust and paint residue from the sticking surface. Press the cushion after sticking.	

Fastener Removal and Installation

BENH23K29406011

Removal

- 1) Depress the head of fastener center piece (1).
- 2) Pull out the fastener (2).



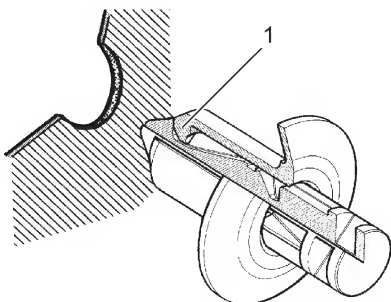
ID26J1940192-01

Installation

- 1) Let the center piece stick out toward the head so that the claws (1) closes.
- 2) Insert the fastener into the installation hole.

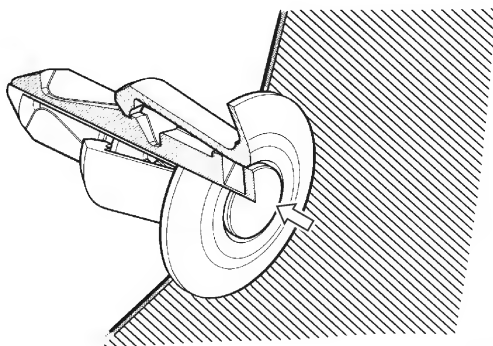
NOTE

To prevent the claws from damage, insert the fastener all the way into the installation hole.



ID26J1940160-01

- 3) Push in the head of center piece until it becomes flush with the fastener outside face.



I649G1940007-02

Seat Removal and Installation

BENH23K29406012

Front Seat

Removal

- 1) Remove the seat hinge nuts (1).



IH23K1940010-03

- 2) Slide the seat hook to the rear and then lift up to remove the front seat.



IH23K1940011-02

Installation

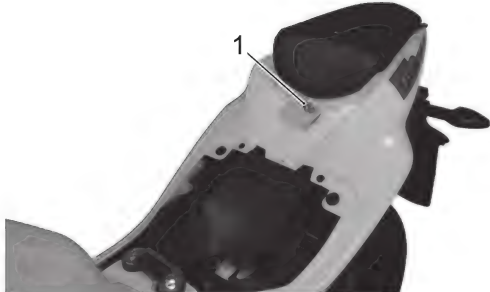
Install the seat hook into the seat hook retainer on frame and tighten the seat hinge nuts (1).



IH23K1940010-03

Rear Seat Removal

- 1) Ignition key model:
Unlock the rear seat with the ignition key (1).



IH23K1940012-02

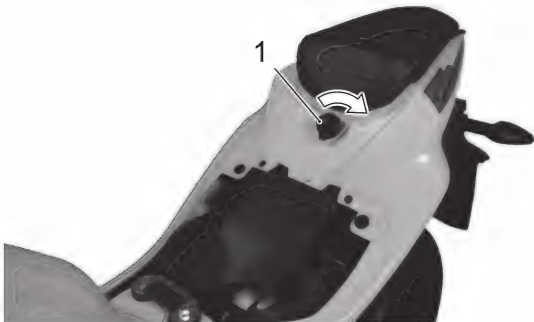
Keyless start model:

- Set ignition key (1) in the "ACC" position and then remove the ignition key (1).



IH23K1940013-01

- Unlock the rear seat with the ignition key (1).



IH23K1940014-02

NOTICE

Remove ignition key except "ACC" position can make damage in the keyless start system.

Make sure remove ignition key in the "ACC" position.

- 1) Remove the rear seat (1) by pulling upward.



IH23K1940015-02

Installation

Slide the seat hook into the seat hook retainers and push down firmly until the seat snaps into the locked position.



IH23K1940016-02

Front Fairing Removal and Installation

BENH23K29406013

NOTE

The instructions given here for removing and installing the front fairing are for the left side.

Use the same procedures for the right side because most of the procedures are the same for both right and left.

Additional explanations are given only when different procedures are used between the right and the left.

Removal

- 1) Remove the cowling side upper screw.



IH23K1940017-01

- 2) Remove inner side cowling bolt and cowling lower center screw.



IH23K1940018-02



IH23K1940019-02

- 3) Remove cowling side lower screw.



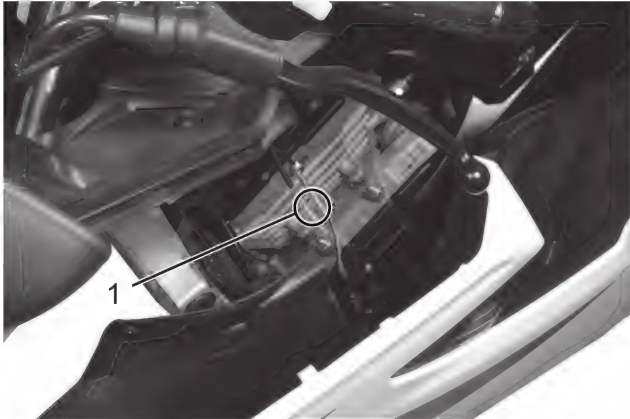
IH23K1940020-02

- 4) Remove cowling side middle screw.



IH23K1940021-02

- 5) Remove front turn light lead wire couplers (1).



IH23K1940022-02

- 6) Pull it outward to remove front fairing.



IH23K1940023-02

Installation

Install front fairing in reverse order of removal.

Fuel Tank Side Cover Assembly Removal and Installation

BENH23K29406025

NOTE

The instructions given here for removing and installing the fuel tank side cover are for the left side. Use the same procedures for the right side because most of the procedure are the same for both right and left. Additional explanations are given only when different procedures are used between the right and the left.

Removal

- 1) Remove fuel tank side cover assembly bolt.



IH23K2940006-01

- 2) Release cushion by pulling out fuel tank side cover bolt and then remove fuel tank side cover assembly.



IH23K2940007-01

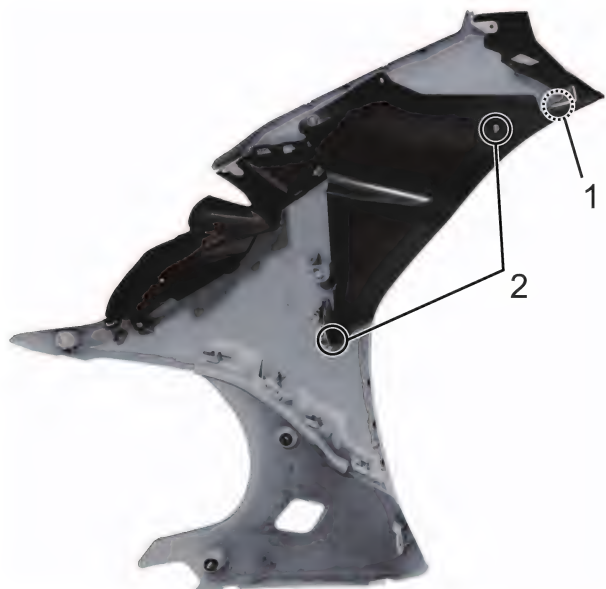
Installation

Install fuel tank side cover assembly in reverse order of removal.

Inner Cowling Removal and Installation

BENH23K29406014

- 1) Remove front fairing. Refer to "Front Fairing Removal and Installation" (Page 9D-22)
- 2) Remove fasteners (1) and screws (2).



IH23K1940024-01

- 3) Release 3 claws by pulling inner cowling for remove inner cowling.



IH23K1940025-01

Fuel Tank Side Cover Disassembly and Reassembly

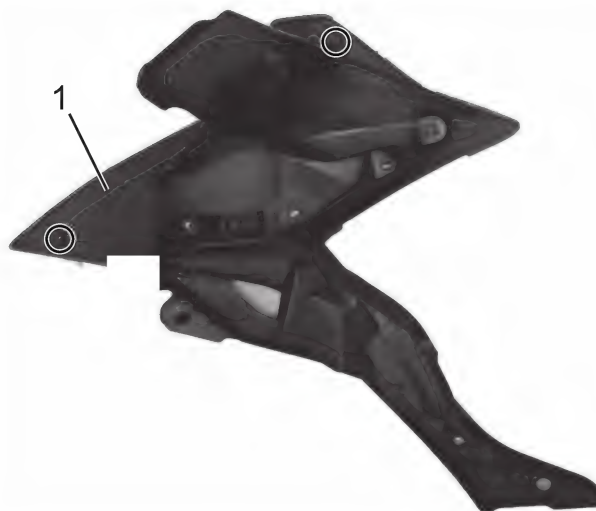
BENH23K29406026

NOTE

The instructions given here for removing and installing the fuel tank side cover are for the right side. Use the same procedures for the left side because most of the procedures are the same for both right and left. Additional explanations are given only when different procedures are used between the right and the left.

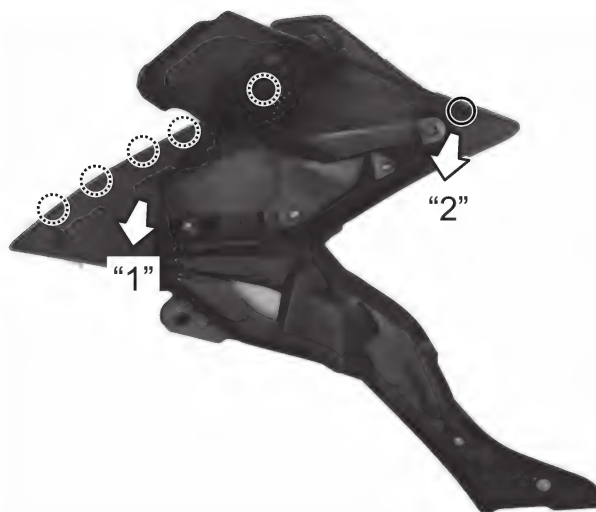
Disassembly

- 1) Remove fuel tank side cover assembly. "Fuel Tank Side Cover Assembly Removal and Installation" (Page 9D-23)
- 2) Remove frame front inner cover (1).



IH23K2940009-01

- 3) Release claws in order "1" → "2" and then remove frame front inner cover.



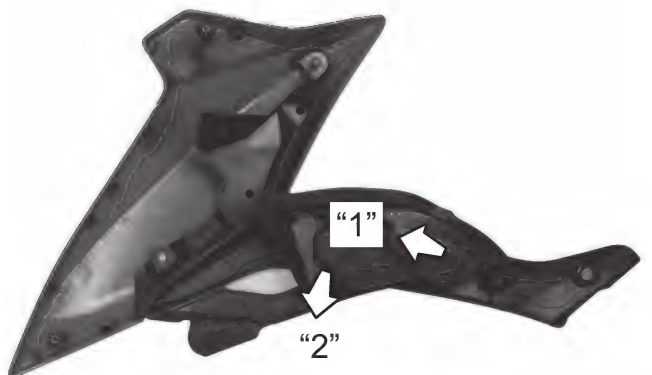
IH23K2940008-01

- 4) Remove frame front middle cover (1).



IH23K2940010-01

- 5) Release claws in order "1" → "2" and then remove frame front middle cover.



IH23K2940011-01

Reassembly

Assembly fuel tank side cover in reverse order of disassembly.

Under Cowling Removal and Installation

BENH23K29406015

NOTE

The instructions given here for removing and installing the under cowling are for the right side. Use the same procedures for the left side because most of the procedures are the same for both right and left. Additional explanations are given only when different procedures are used between the right and the left.

Removal

GSX R 150 Model

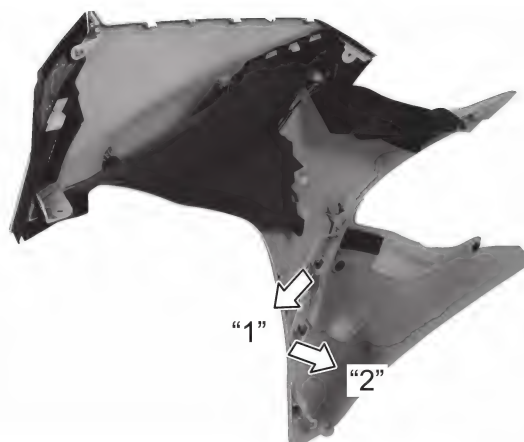
- 1) If necessary, remove the front fairing. Refer to "Front Fairing Removal and Installation" (Page 9D-22)

- 2) Remove under cowling screw.



IH23K1940026-01

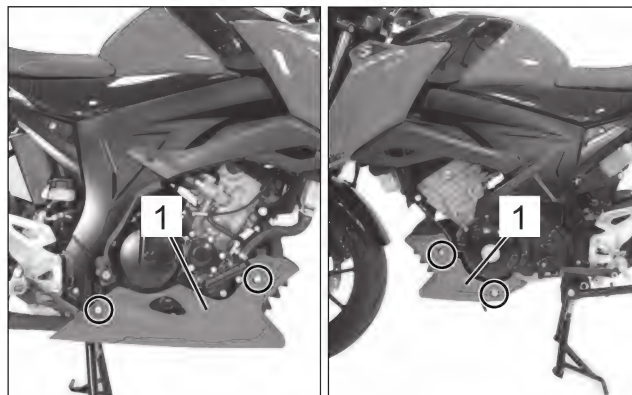
- 3) Release claws in order of "1" → "2" to remove under cowling.



IH23K1940027-02

GSX S 150 Model

- 1) Remove under cowling bolt and then remove under cowling assembly (1).



IH23K2940012-01

Installation

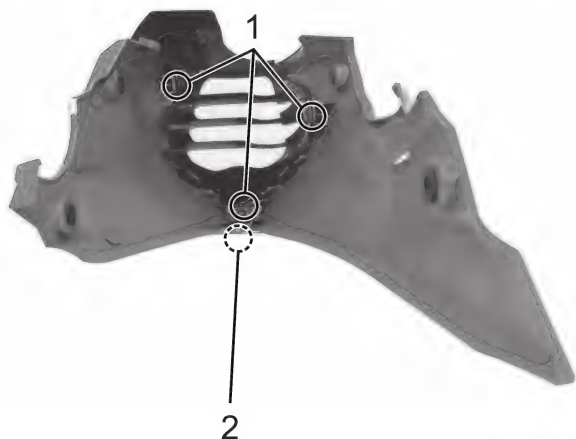
Install the under cowling assembly in the reverse order of removal.

Under Cowling Disassembly and Reassembly

BENH23K29406027

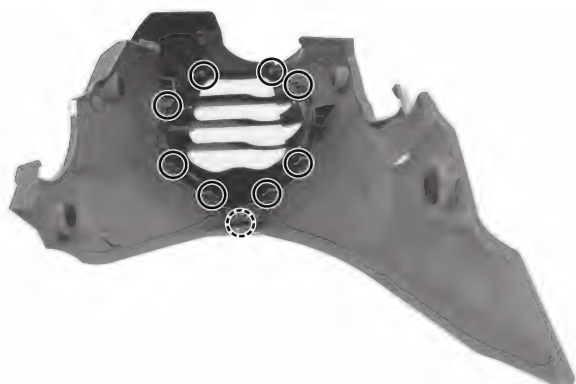
Disassembly

- 1) Remove under cowling assembly. "Under Cowling Removal and Installation" (Page 9D-25)
- 2) Remove under cowling assembly screw (1) and fastener (2).



IH23K2940013-01

- 3) Release claws and disassembly under cowling assembly.



IH23K2940014-01

Reassembly

Assembly fuel tank side cover in reverse order of disassembly.

Cowling Side Middle Removal and Installation

BENH23K29406016

NOTE

The instructions given here for removing and installing the under cowling are for the right side. Use the same procedures for the left side because most of the procedures are the same for both right and left.

Additional explanations are given only when different procedures are used between the right and the left.

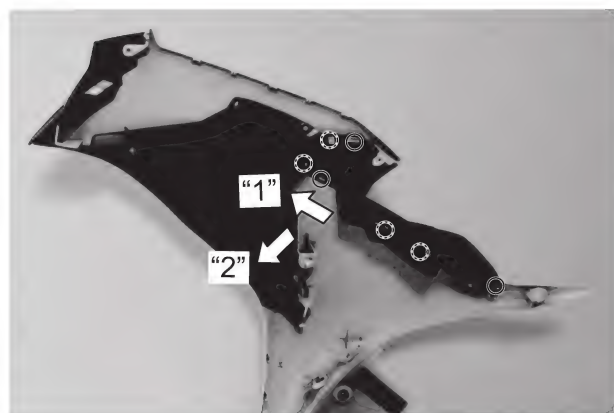
Removal

- 1) If necessary, remove the front fairing. Refer to "Front Fairing Removal and Installation" (Page 9D-22)
- 2) Remove inner cowling. Refer to "Inner Cowling Removal and Installation" (Page 9D-24)
- 3) Remove cowling side middle screw.



IH23K1940028-04

- 4) Release claws and then remove cowling side middle in order of "1" → "2".



IH23K1940029-03

Installation

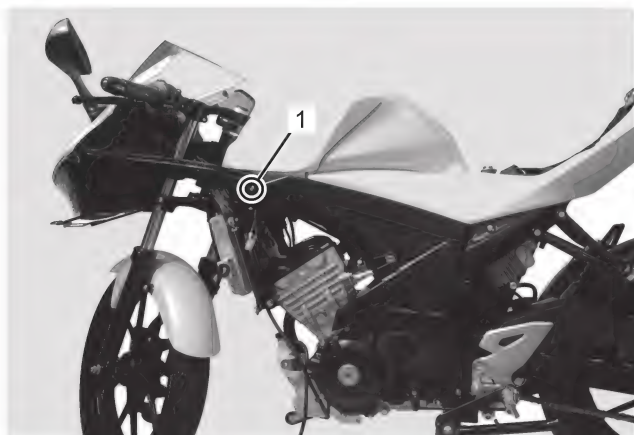
Install the cowling side middle in the reverse order of removal.

Fuel Tank Cover Removal and Installation

BENH23K29406017

Removal

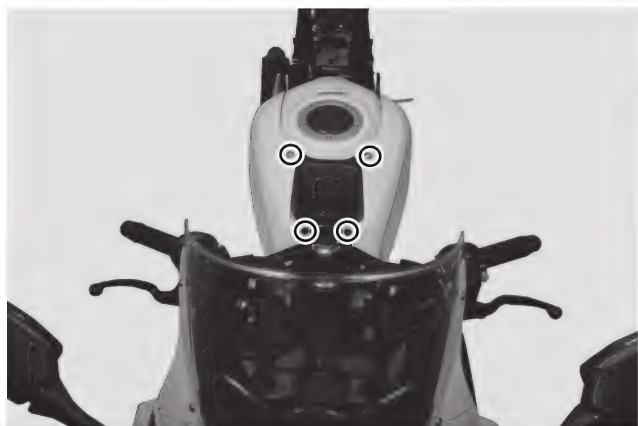
- 1) GSX R 150 Model: Remove front fairing. "Front Fairing Removal and Installation" (Page 9D-22)GSX S 150 Model: Remove fuel tank side cover assembly. "Fuel Tank Side Cover Assembly Removal and Installation" (Page 9D-23)
- 2) Remove frame cover bolt (1).



IH23K1940055-01

- 3) Remove fuel tank cover bolts and fasteners.

GSX R 150 Model



IH23K1940054-02

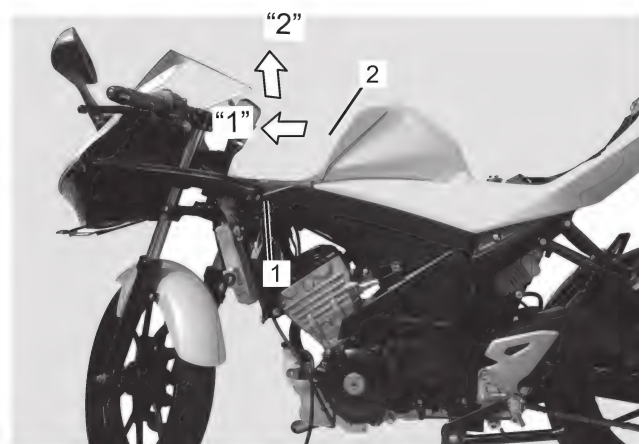
GSX S 150 Model



IH23K2940015-01

- 4) While pulling frame cover (1) remove fuel tank cover (2) in order of "1" → "2".

GSX R 150 Model



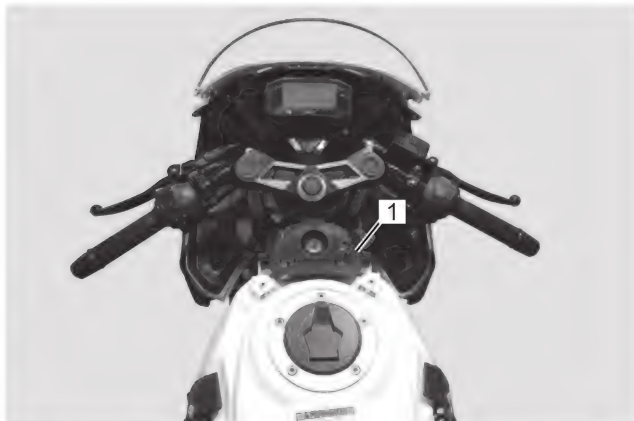
IH23K1940056-01

GSX S 150 Model



IH23K2940016-01

5) If necessary, remove fuel tank center cover (1).



IH23K1940057-02

NOTICE

For keyless start model, be careful not to break keyless indicator lead wire.

Please make sure disconnect keyless indicator lead wire coupler before you remove fuel tank center cover (1).

Installation

Install fuel tank cover in the reverse order of removal.

Windscreen Removal and Installation

BENH23K29406018

Removal

Remove the windscreen with release the screws.



IH23K1940030-02

Installation

Install the windscreen in the reverse order of removal.

Body Cowling Removal and Installation

BENH23K29406019

Removal

1) Remove front fairing. Refer to "Front Fairing Removal and Installation" (Page 9D-22)



IH23K1940031-02

2) Remove rear view mirror bolts.



IH23K1940032-03

3) Remove panel meter screws.



IH23K1940033-02



IH23K1940034-02

4) Remove headlamp coupler (1).



IH23K1940035-02

5) Pull ahead to remove body cowling from meter panel.

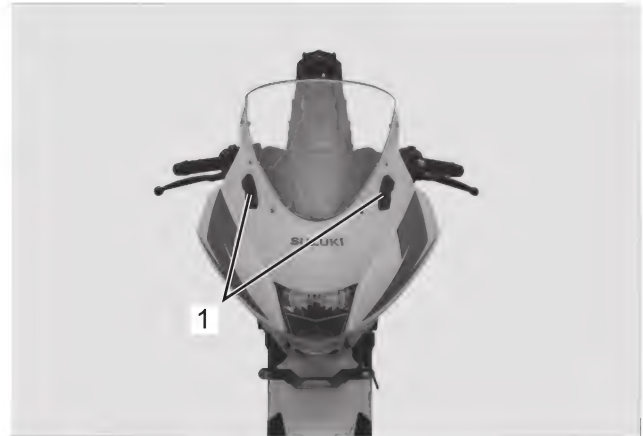


IH23K1940036-02

Installation

Install the body cowling in the reverse order of removal. Pay attention to the following point:

- Before installing body cowling, check that the cushion (1) are installed correctly.



IH23K1940040-02

Meter Panel Removal and Installation

BENH23K29406020

Removal

- 1) Remove front fairing. Refer to "Front Fairing Removal and Installation" (Page 9D-22)
- 2) Remove body cowling. Refer to "Body Cowling Removal and Installation" (Page 9D-28).
- 3) Release meter panel hook (1).



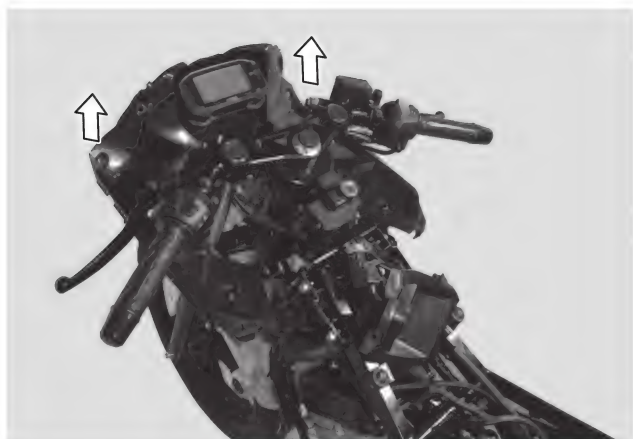
IH23K1940037-02

- 4) Remove speedometer coupler (1).



IH23K1940038-02

- 5) Remove meter panel by pulling upward through the steering.



IH23K1940039-02

Installation

Install the meter panel in the reverse order of removal. Pay attention to the following point:

- Before installing meter panel, check that cushion are installed correctly. Refer to "Meter Panel Cushion Construction" (Page 9D-19)

Frame Cover Removal and Installation

BENH23K29406021

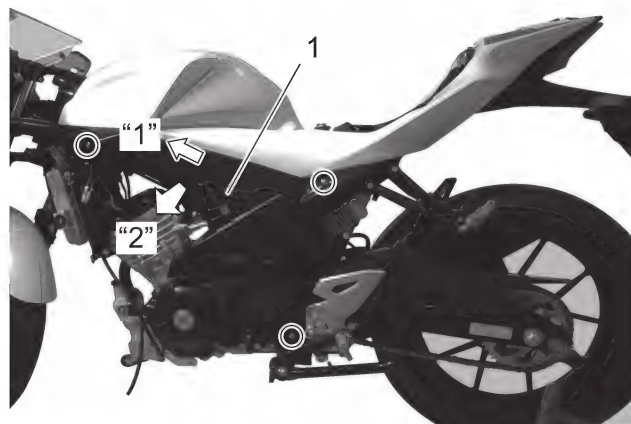
NOTE

The instructions given here for removing and installing the under cowling are for the left side. Use the same procedures for the right side because most of the procedures are the same for both right and left.

Additional explanations are given only when different procedures are used between the right and the left.

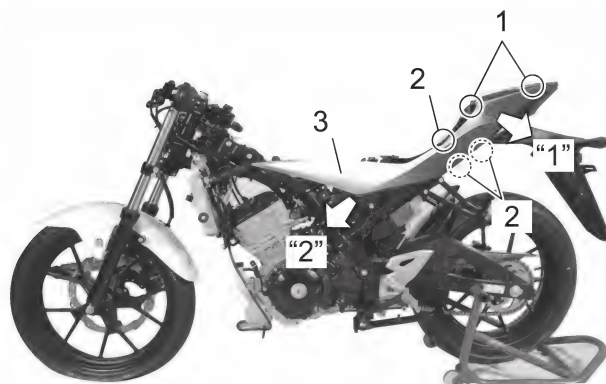
Removal

- 1) Remove front fairing. Refer to "Front Fairing Removal and Installation" (Page 9D-22)
- 2) Remove front and rear seat. Refer to "Seat Removal and Installation" (Page 9D-20)
- 3) Remove screws and then remove front frame cover (1) in order of "1" → "2".



IH23K1940041-01

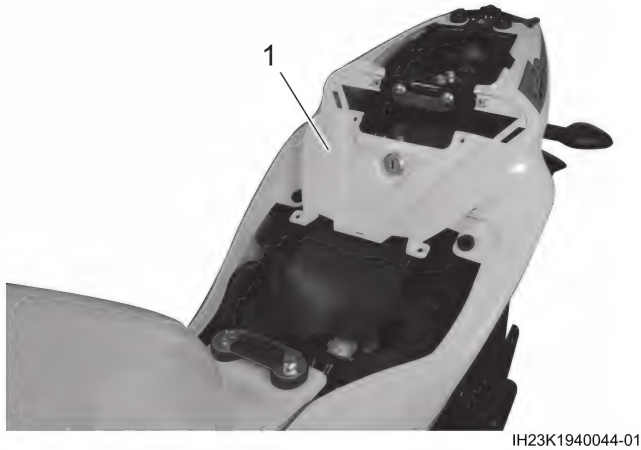
- 4) Remove screws (1), fasteners (2), and then remove frame upper cover (3) in order "1" → "2".



IH23K1940042-01

9D-31 Exterior Parts:

- 5) If necessary, remove frame upper center cover (1).



Installation

Install the frame cover in the reverse order of removal.

Rear Fender Rear Removal and Installation

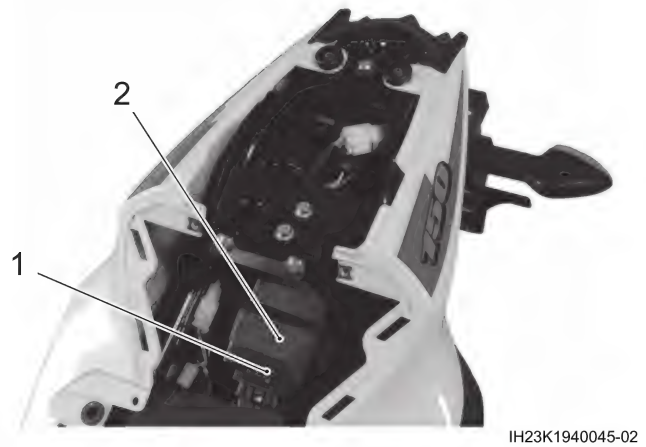
BENH23K29406022

Removal

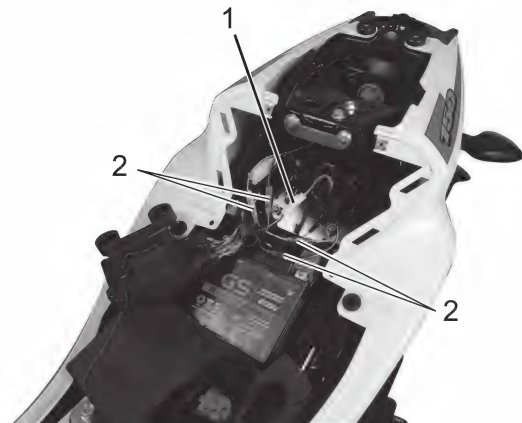
- 1) Remove the following parts.
 - a) Front fairing: (Page 9D-22)
 - b) Frame cover: (Page 9D-30)
- 2) Remove rear fender extension (1).



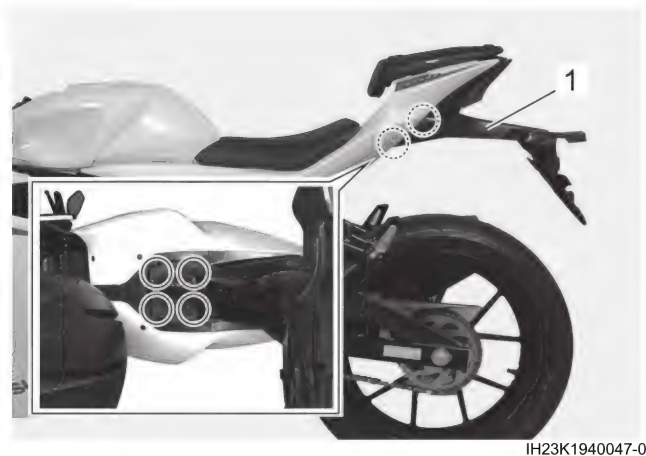
- 3) Disconnect ECM coupler (1) and remove ECM (2) and ECM holder (3).



- 4) Disconnect license plate light lead wire coupler (1) and rear turn signal lead wire couplers (2).



- 5) Remove rear fender rear (1).



6) If necessary, remove rear fender brace (1).



IH23K1940048-01

NOTICE

Be careful not to bent, twist, or damage the license plate and rear turn signal lead wire when you remove or install rear fender brace.

Installation

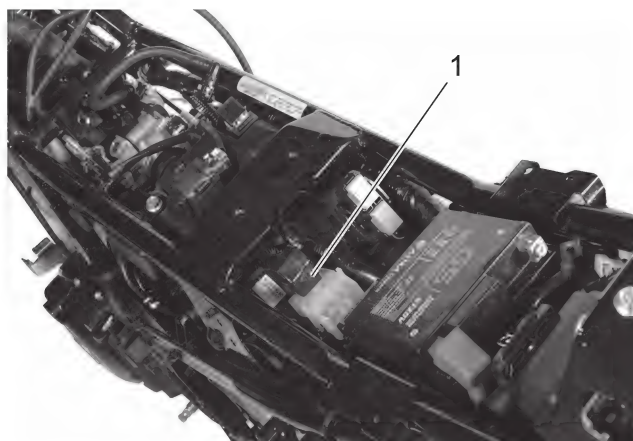
Install rear fender rear in the reverse order of removal.

Rear Fender Front Removal and Installation

BENH23K29406023

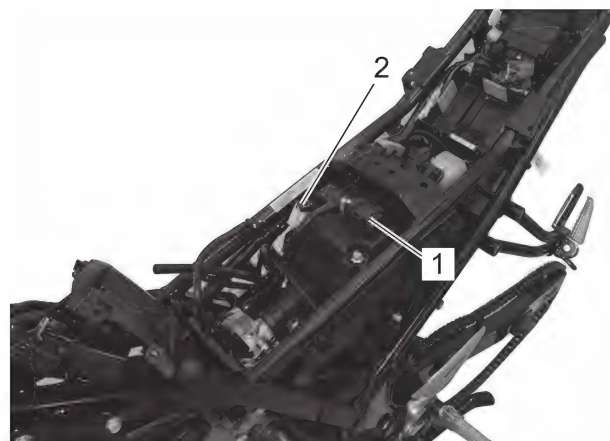
Removal

- 1) Remove the following parts.
 - a) Front fairing: (Page 9D-22)
 - b) Frame cover: (Page 9D-30)
 - c) Rear fender rear: (Page 9D-31)
- 2) Remove rear brake light. (Page 9B-8)
- 3) Remove battery. (Page 1J-11)
- 4) Remove ECM. (Page 1C-2)
- 5) Disconnect fuse box (1).



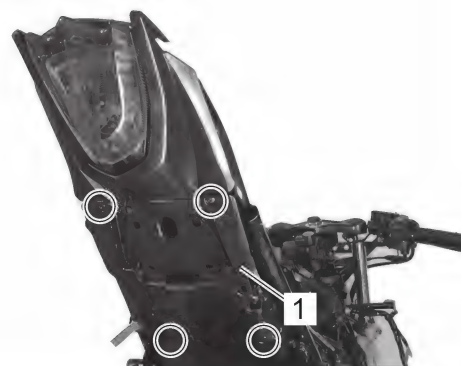
IH23K1940049-01

6) Disconnect TO sensor (1) and turn signal relay (2) from rear fender front.



IH23K1940050-01

7) Remove rear fender front (1).



IH23K1940051-01

Installation

Install the rear fender front in the reverse order of removal.

Specifications

Tightening Torque Specifications

BENH23K29407001

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Seat Lock Construction” (Page 9D-1)

“Headlight Housing Construction” (Page 9D-2)

“Front Fairing Construction (GSX R 150 Model)” (Page 9D-6)

“Fuel Tank Side Cover and Under Cowling Construction” (Page 9D-8)

“Frame Cover and Rear Fender Construction” (Page 9D-12)

“Front Fender Construction” (Page 9D-13)

“Fuel Tank Construction” (Page 9D-14)

“Fasteners Information” in Section 0C (Page 0C-9)

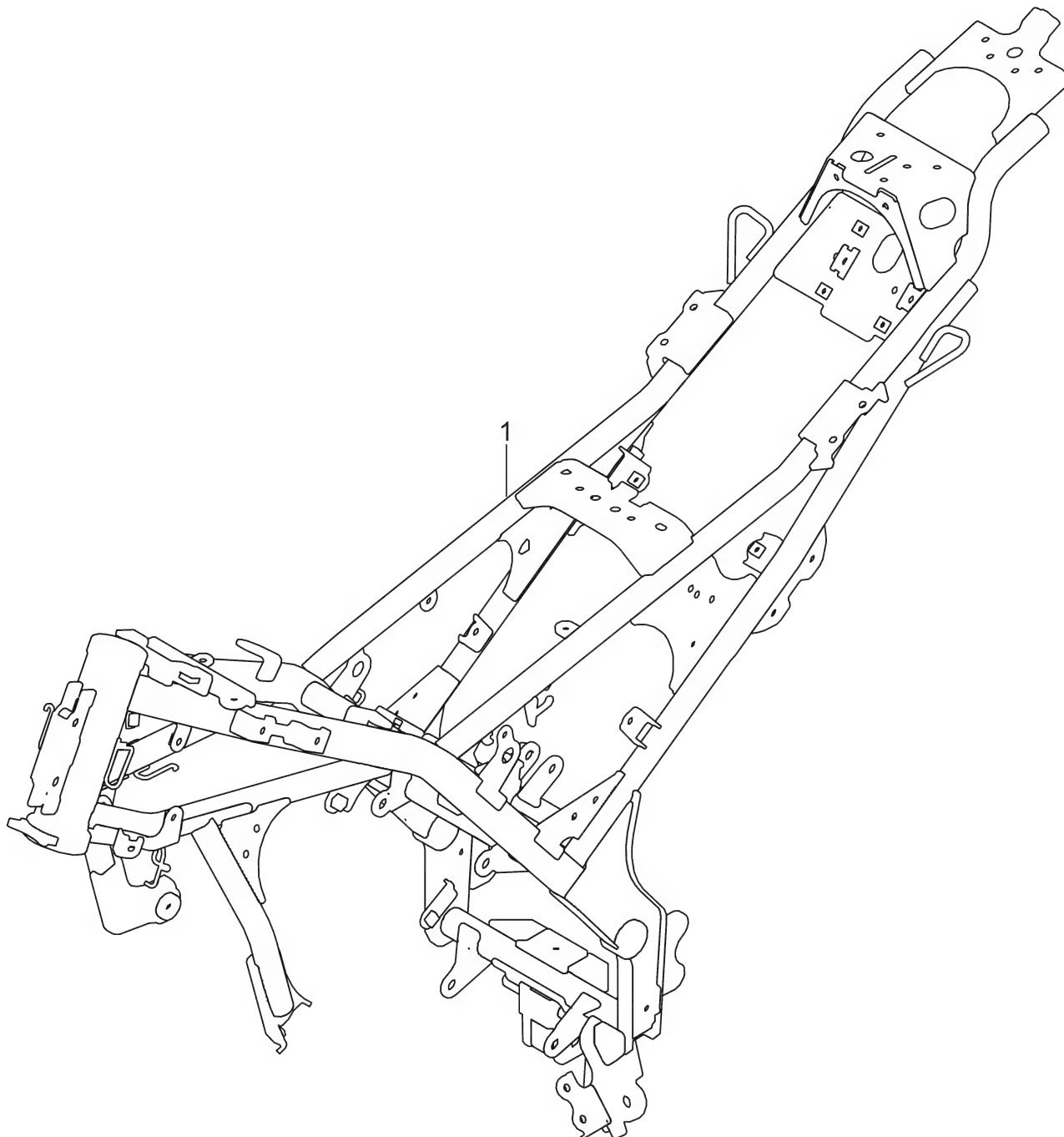
Body Structure

Repair Instructions

Frame Construction

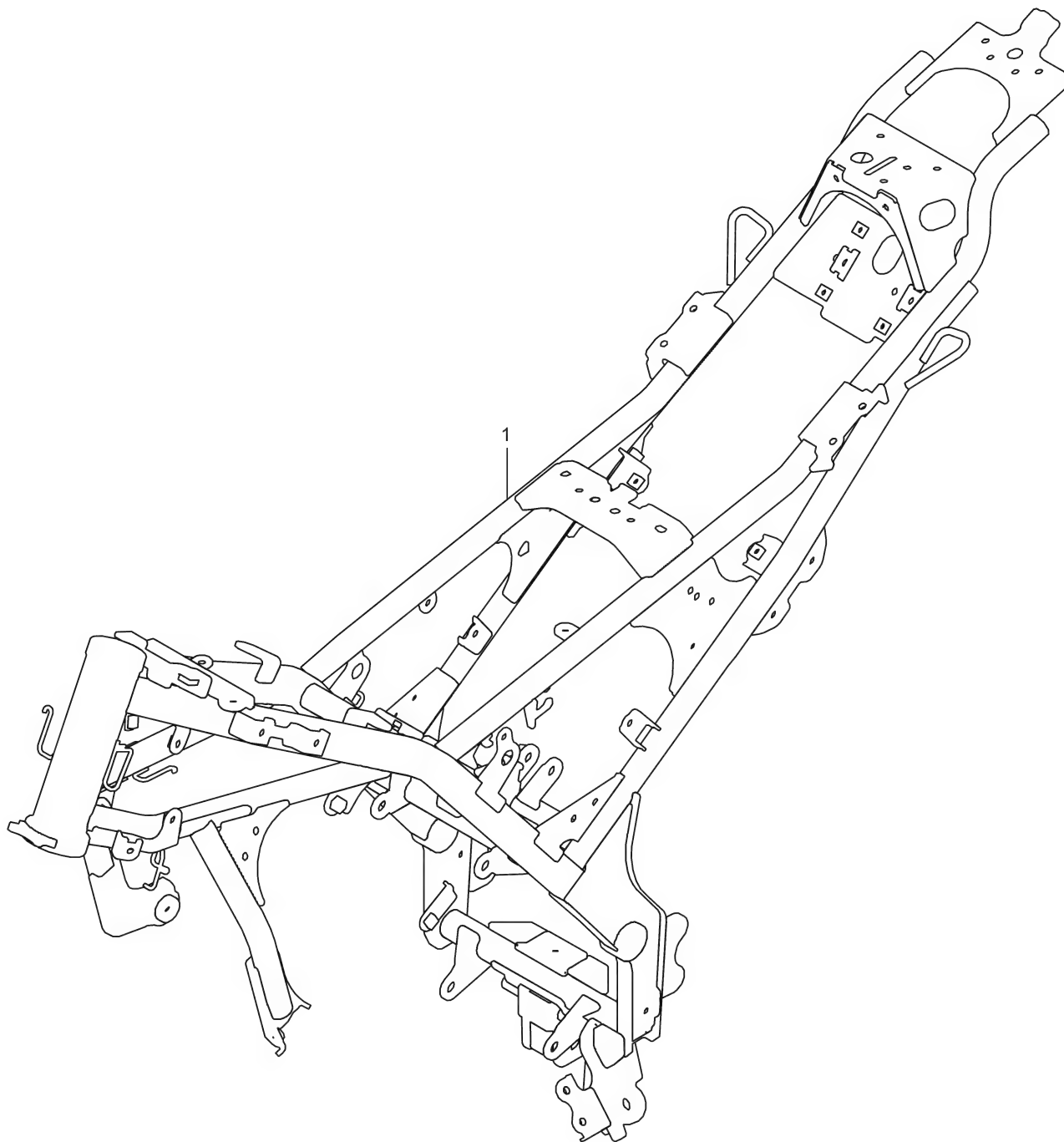
GSX R 150 Model

BENH23K29506001



1. Frame

GSX S 150 Model

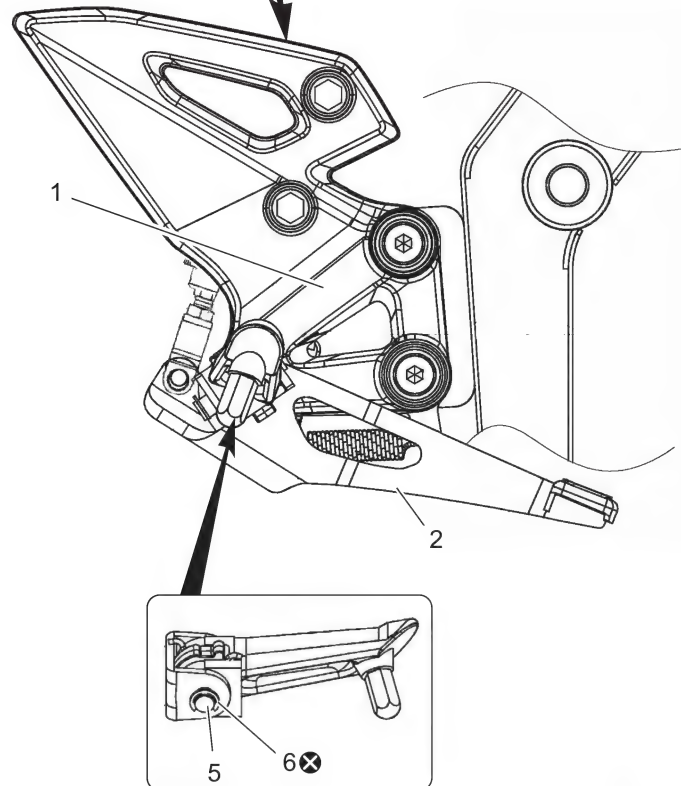
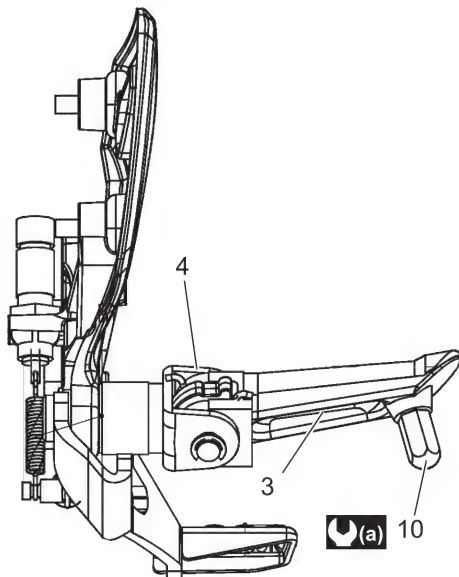
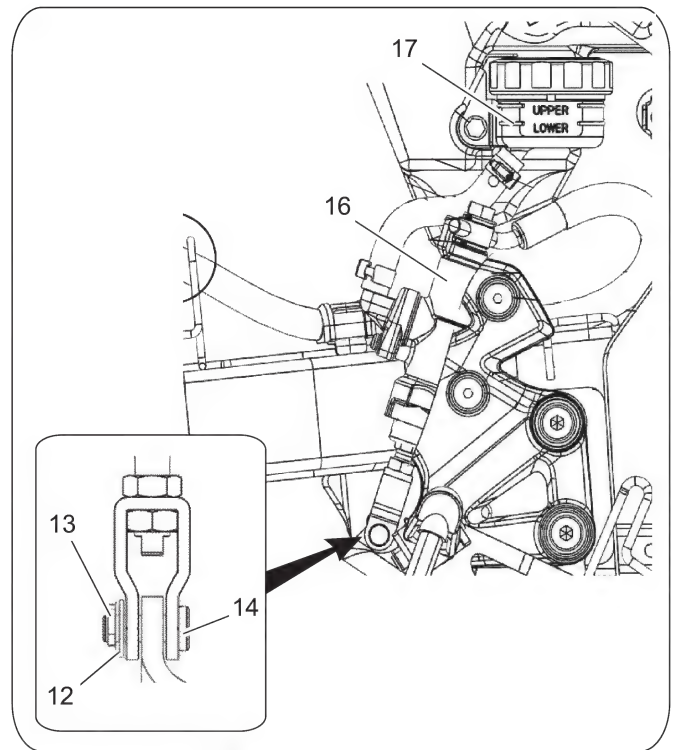
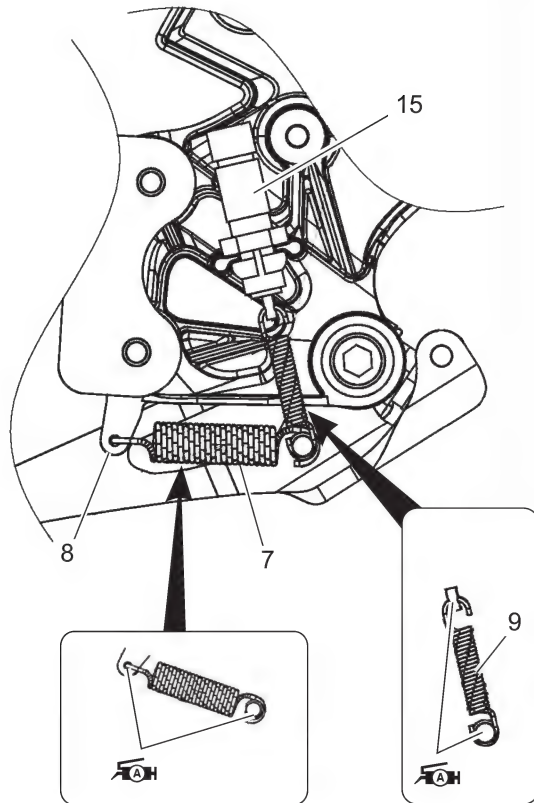


1. Frame

IH23K2950001-02




Front Footrest Construction

BENH23K29506002



IH23K1950002-01

9E-4 Body Structure:

1. Front footrest	8. Rear brake pedal return spring plate	15. Stop lamp switch
2. Rear brake pedal	9. Rear brake light switch spring	16. Rear brake master cylinder
3. Front footrest bar	10. Bank sensor bolt	17. Rear brake reservoir tank
4. Front footrest bracket	11. Rear brake master cylinder pin	 (a) : 16 N·m (1.63 kgf-m, 11.8 lbf-ft)
5. Front footrest pin	12. Rear brake master cylinder washer	 : Apply grease to sliding surface.
6. E-ring	13. Rear brake master cylinder cotter pin	 : Do not reuse.
7. Rear brake pedal return spring	14. Rear brake pedal cotter pin	

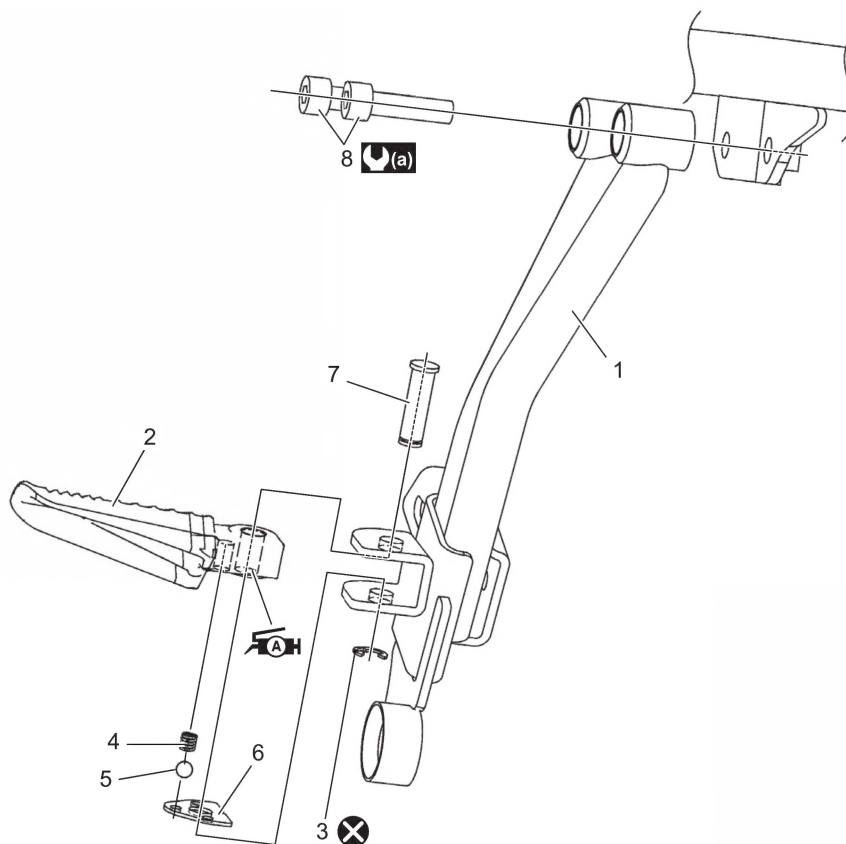
Front Footrest Removal and Installation

Refer to “Front Footrest Construction” (Page 9E-3).

BENH23K29506003

Pillion Footrest Construction

BENH23K29506004



IH23K1950003-02

1. Pillion footrest bracket	5. Pillion footrest ball	(a) : 18 N-m (1.83 kgf-m, 13.3 lbf-ft)
2. Pillion footrest bar	6. Pillion footrest plate	(A) : Apply grease to sliding surface.
3. E-ring	7. Pillion footrest pin	X : Do not reuse.
4. Pillion footrest spring	8. Pillion footrest bracket bolt	

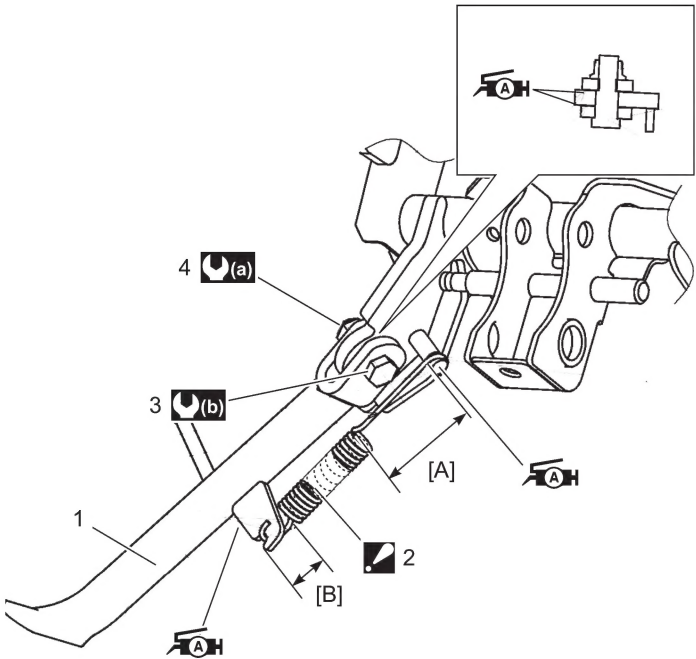
Pillion Footrest Removal and Installation

BENH23K29506005

Refer to "Pillion Footrest Construction" (Page 9E-5).

Side-stand Construction

BENH23K29506006



IH23K1950004-01

[A]: Long	2. Side stand spring : For installation direction of the side stand spring, refer to the illustration.	: 30 N·m (3.06 kgf-m, 22.1 lbf-ft)
[B]: Short	3. Side stand bolt	: 5 N·m (0.51 kgf-m, 3.69 lbf-ft)
1. Side stand	4. Side stand nut	: Apply grease to sliding surface.

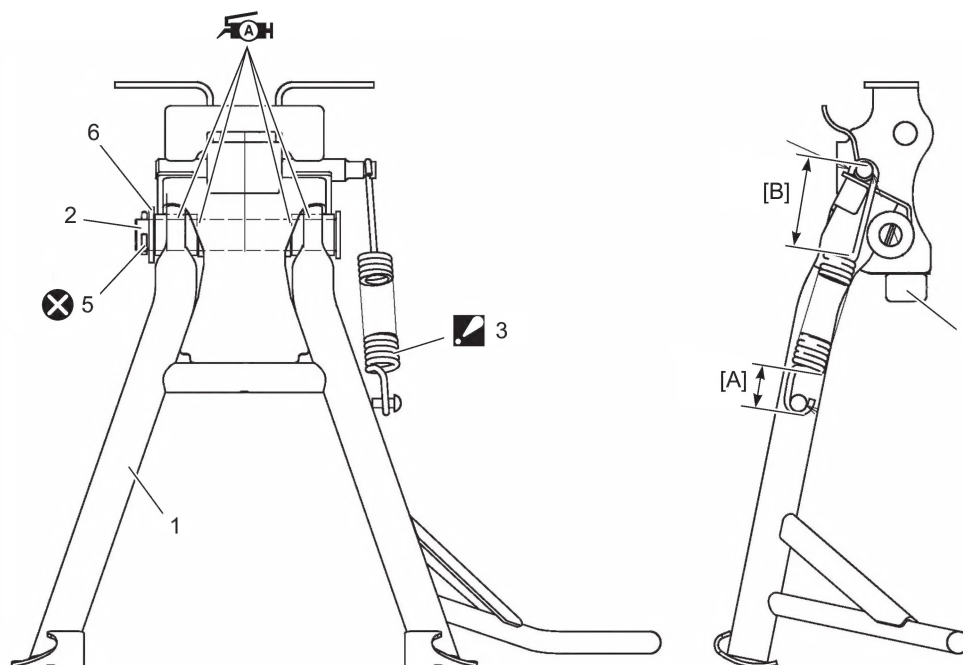
Side-stand Removal and Installation

BENH23K29506007

Refer to “Side-stand Construction” (Page 9E-6).

Center Stand Construction (If equipped)

BENH23K29506008



IH23K1950005-01

[A]: Front	2. Center stand shaft	6. Washer
[B]: Long	3. Center stand spring : For installation direction of the center stand spring, refer to the illustration.	AH : Apply grease to sliding surface.
[C]: Short	4. Center stand cushion	X : Do not reuse.
1. Center stand	5. Center stand cotter pin	

Center Stand Removal and Installation

BENH23K29506009

Refer to "Center Stand Construction (If equipped)" (Page 9E-7).

NOTE

Support the motorcycle securely with a jack.

Specifications

Tightening Torque Specifications

BENH23K29507001

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Front Footrest Construction” (Page 9E-3)

“Pillion Footrest Construction” (Page 9E-5)

“Side-stand Construction” (Page 9E-6)

“Fasteners Information” in Section 0C (Page 0C-9)

Special Tools and Equipment

Recommended Service Material

BENH23K29508001

NOTE

Required service material(s) is also described in:

“Front Footrest Construction” (Page 9E-3)

“Pillion Footrest Construction” (Page 9E-5)

“Side-stand Construction” (Page 9E-6)

“Center Stand Construction (If equipped)” (Page 9E-7)
